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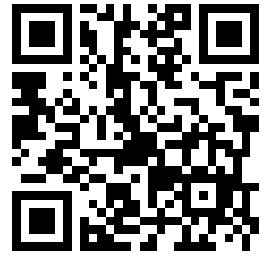

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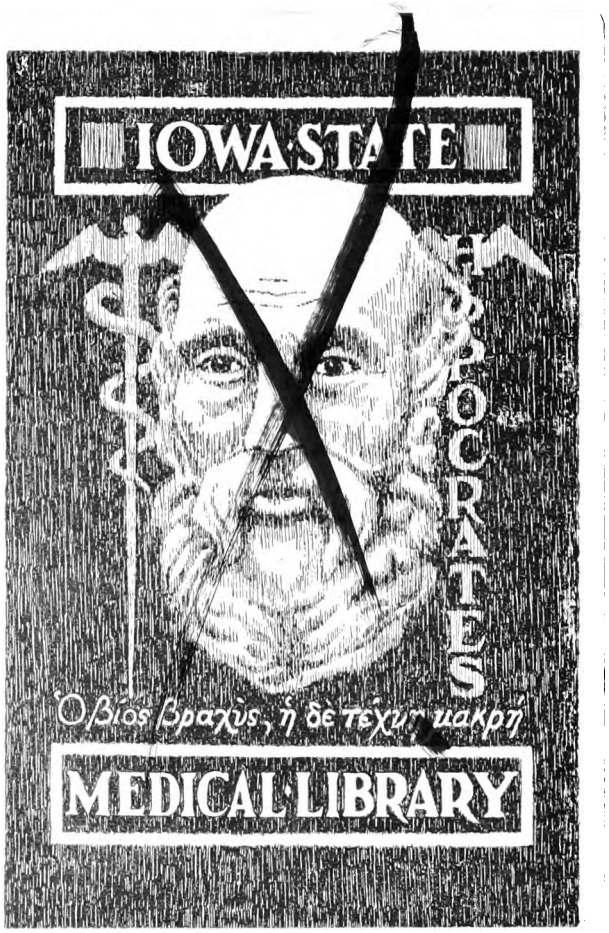

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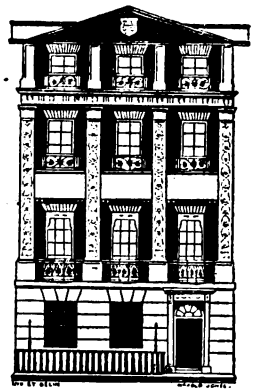

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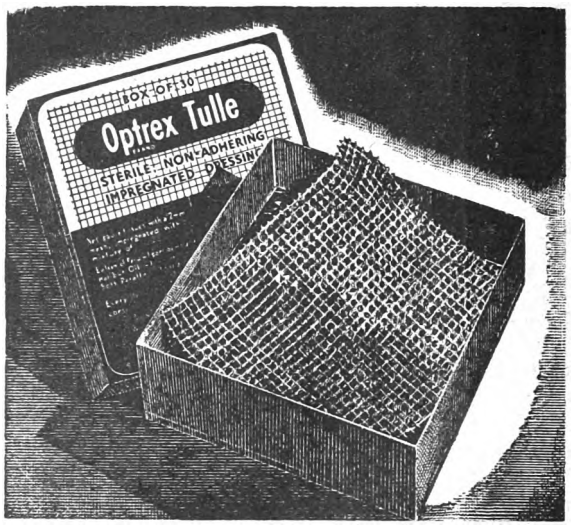

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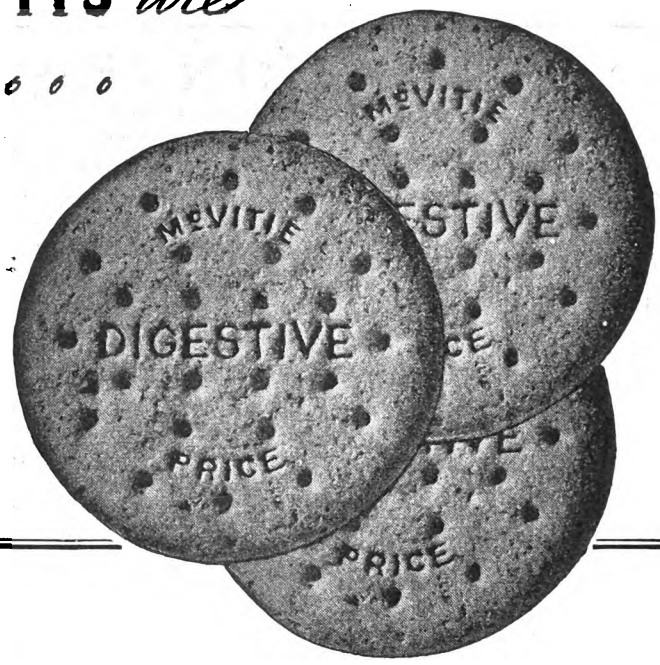

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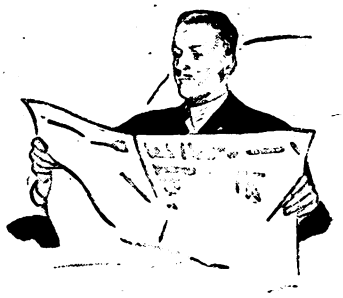

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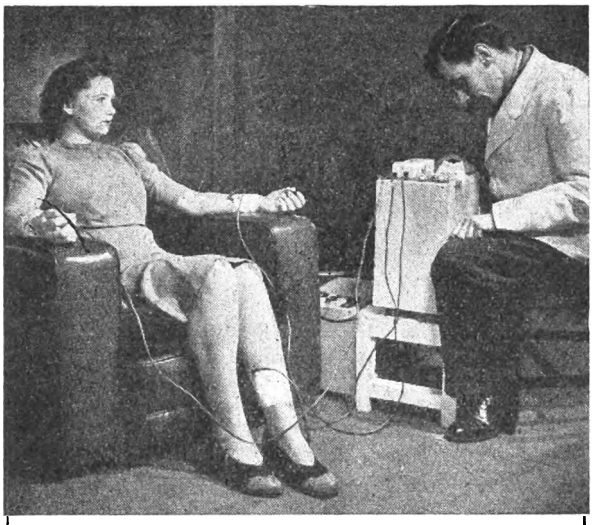

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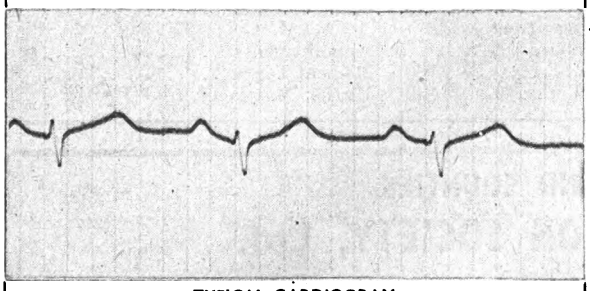

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IT is one of the paradoxes of war that from its slaughter, its cruelties, and its misery there often emerges a new desire for freedom, tolerance, and equal opportunity. This last war has made it vividly clear to Government and people that if we are to get the best out of the worker conditions in industry must be happy.

Ours, in the phrase of Mr. T. B. Layton, is an "industry of health." We have come more than ever to regard the sick man as a diseased individual, rather than as a case of the disease. We have come to accept, too, that the care of the patient needs team-work: doctor, nurse, and patient have their parts to play. In this paper I hope to show that great changes are needed in the outlook and the rôle of the nursing staff if the best is to be achieved.

The lack of nurses has drawn attention to this aspect of our work, and the recent nursing charter is an attempt to attract them into the profession by dangling in front of them prospects of greater salaries and increased social amenities. These are in themselves commendable, but in my talks with large numbers of nurses and sisters I have been impressed with the fact that they all feel that it is not the money which keeps the average girl from joining the profession. They don't even mind the discipline; women, in fact, seem to enjoy discipline; they have entered with great zest into the marching and drilling and routine disciplined life of the Services. But they fear, in nursing, the cold unsympathetic acceptance of their aid by doctors and sisters: they are not welcomed in the true sense as part of a team. The very fact that the nurses do not urge their own sisters and school colleagues to join them is our clearest evidence of their dissatisfaction with their work.

I contend that the doctors are much to blame for the present conditions; and the nursing profession, too, are not without their faults. There is some difference of opinion these days as to what we mean by democracy, but for most of us in this country Plato's conception of democracy still holds: "Every citizen has an equal right to take a personal part in the government through the assembly." That is team-work, and that is what every nurse should feel she is engaged in.

SINS OF THE DOCTORS

We doctors seldom bother to discuss with the nursing staff our proposed régime of treatment for the patient, or to explain how we have arrived at our decisions. We treat them very much as if they were fools, incapable of understanding, merely there to take orders and not to question them. Our attitude is aloof, and our decisions are wrapped in mystery, as if we were inspired or superlatively clever. They are not admitted as true colleagues, presumably interested in the welfare of the case. Of course this habit has spread to our treatment of the patients themselves, and there has recently been a timely outcry against the growing practice of avoiding discussion or sensible explanation to the patient of his troubles.

Nothing will fortify a patient more for his gastrectomy or other abdominal operation than the reassurance of the nurse as she prepares him; but her talk must be founded on knowledge, otherwise it is deceitful bluff or prattle. Yet how little we tell the nurses! Most of them do not even know what a modern gastrectomy looks like, nor how long it takes the stomach wound to heal, though they are asked to arrange the post-operative feeding, and are ordered to give drugs, without having learned much about their action, or of what effects to watch for or to fear. Again, we are damnably inconsistent, and not so clever as we think. For years we filled people with intravenous salines, and no case of accident or major operation died without the use of a saline drip: now we think we may have killed some of them. We tanned all burns: now we think we were poisoning them. We gave everybody sulphonamides; now we suddenly find they are not quite miraculous. No wonder some of the girls think—but they seem scared to say it—that our opinions are often like soap-bubbles, one moment reflecting all earthly opinion, the next shattered into thin air.

TEACHING THE NURSE

Nor do we regard the teaching of the nursing staff as part of our duties. I believe that a doctor in a ward should know his nurses' names, just as the chief in the teaching hospital knows his ward clerks. They will feel that an interest is being taken in them, that their work is appreciated; and it will give them a desire to excel.

The nurse, like the doctor in training, needs teaching at the bedside. Senses, to become sensible, need the regular discipline of constant clinical teaching. Systematic teaching is something apart. The nurses have a legitimate grouse here too when they say that many of their medical teachers show apathy and lack of interest. Lecturing, particularly on anatomy and physiology, is palmed off on busy junior medical officers, who regard it as a nuisance and thank heaven when it is over. They deliver dry-as-dust lectures, straight from the nurses' standard textbooks, with nothing to enliven them but an ancient anatomical chart, and the usual skeleton dangling in its cupboard. When nurses are learning anatomy, visits to anatomical departments and teaching on the cadaver are essential. Lectures on medicine and surgery need more up-to-date methods. Many of the girls have never seen a gastric ulcer, have not the foggiest notion of the appearances of the ulcerated or carcinomatous colon, and have only seen the pneumonic lung in pictures. They need to see pathological specimens, lantern slides, and cinema films. First-class material of this kind should be obtainable from central depots. Their medical teacher should take them to see suitable cases illustrating his lectures; and the sister-tutor should be kept informed of the cases available, and should be able to take nurses into the wards to see such conditions as jaundice, uræmia, or meningitis. The nurses need to be taught more about the underlying principles of our treatment. Many of them—especially in these days when patients are grouped for convenience—spend months working only in medical gastric wards, carrying routine feeds and dishing out medicines, with no notion of the scientific reasons for this treatment. For a nurse to insist effectively that a patient must not smoke, she must know why smoking is forbidden and must be able to explain the reasons intelligently. We doctors seldom explain that point to the patient, as we should—but I need not confess to all our sins.

Teaching is time-consuming, and the teacher should be properly paid. True, Hippocrates enjoined us "to teach the art to such of them as wish to learn it, without payment or agreement"; but Hippocrates did not anticipate the rise and growth of our income-tax.

We must have a care in front of nurses. The doctor's life these days is busy, and bad habits and irritable moods grow like weeds on such a soil. The modern outpatient department, with its one great long rush, can be soul-destroying; the nurses find themselves used as valets handing the doctor his towels or other personal wants, and serving merely as a "standby" for female patients. They have no personal contact with the patient, there is rarely time to teach them anything, and they don't feel part of the team. Many out-patients are not in urgent need of attention, and we

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should adopt more generally a system of sorting, giving priority to urgent cases as was done so successfully on the battlefield. Some doctors have themselves to blame for much of their overwork. Outpatient medical staffs need to be larger and there are many willing to join the team if they are only given an opportunity.

We must control our bad clinical habits in front of the nurses: as a surgeon I can say that "wound peeping" and "wound squeezing" are catching. The custom of giving sleeping-draughts and aperients in hospital as a routine is to some extent responsible for the growing practice among the public of taking purges and sleeping-draughts (particularly barbiturates) regularly when they have no need of them. No wonder they gollop aspirin as if it were popcorn.

Finally, a busy life is apt to destroy tenderness and sensibility. We seem to be ashamed to show sentiment, and old-fashioned kindliness is looked down on; to fear for the patient courts the rebuke of timidity. This is a time of stocktaking in human values. To the young nurse, a human immediate personal approach to her patient is the very all: we must have a care not to blunt her natural tenderness.

SISTERS

We all of us honour the sisters of former times, who scorned delights and lived laborious days. They have been great under great difficulties—they were on the side of the angels, women of great character. Time and again one has heard of a sister the remark "she would have made a good wife." But it is not fair to expect women to sacrifice their whole existence and deny themselves the happiness of married life and the happiness of children. In order to marry, however, they must have opportunities to find their mates; and though we need not act as marriage brokers, we must see to it that these girls have such opportunities in their social life. Marriage has hitherto robbed us of their hard-gained experience, judgment, and wisdom. It is always argued against their employment in hospitals after marriage, that in nursing "the night is joint labourer with the day." That is true; but if a doctor can work all day in hospital and go home to his fireside and his family, so can the sister of the ward.

The nursing charter has recognised this; under it, nurses will be getting good salaries, and will be able to afford extra help at home to attend to the house. A married sister could serve fully in the operating-theatre; and we all know how many years it takes to train that valuable member of the surgical team. Married sisters could also work in health centres, and I would urge that some of them should be trained in the simple routine duties of a laboratory technician. It will take them but a few months to learn to do hæmoglobin estimations, blood-counts, blood-ureas, and sedimentation-rates, and to examine urines and sputa microscopically. It is absurd to suppose that the testing of a urine is the only thing a highly intelligent girl is capable of. Is there any reason why sisters should not take routine blood-pressures? In fact, as our nursing staff increases (and I am optimistic) some of these technical duties could well become part of the ward sister's routine; it would broaden her interests.

In the outpatient department married sisters will be able to serve particularly well; they will know more about home conditions than single girls, and as mothers will sympathise with the woman who is fearing grave news, or wondering whether the doctor is going to order some fearful operation for her child.

Here I must cast a small kindly pebble at the sisters themselves. I would like to see them cast aside the present barrier of authority between themselves and the nurses. The girls are afraid of them—that is what they tell me. I would like to see a more friendly spirit and not a martial pose. I say "pose" because many garb their mind in stern tradition's clothes when they put on their uniforms, as if that were the only way to retain authority. It is the way of the world to try to grind down the many facets of human character into a dull uniformity. But I am convinced that one can retain dignity with the junior staff and at the same time be friendly. One sees it time and again with the senior surgeon, when he is laughing and joking, tea-ing and dining with his most junior medical officers, gossiping on all the little things in life; yet they will work with him and for him, and there is a fine team spirit.

"No star or planet has any cover before it," said Marcus Aurelius.

I would like to see these sisters have tea with their girls, take them at least twice a day round from bed to bed, tell them about each of the patients, and show them the way to talk to sick people. It is a terrible thing to have to say that some of these sisters are themselves out of date, and that they don't relish the idea of close questioning. That is not surprising, for many of them, after years of, say, fever or other special nursing, find themselves having to do general nursing, with its new techniques, its advances, and altered methods of treatment. They are the first to admit that they would welcome refresher courses, and one would like to see more such courses arranged for them. The trained sister should be interchanged or encouraged to work at postgraduate or other teaching hospitals, so that she can come back refreshed with new ideas and bring new life to her hospital. There are scholarships for doctors to travel to other countries, and sisters should have similar opportunities. They need to have society meetings, and to write papers (and many of them wield delightful sensitive pens).

Of course, they need more freedom in their own wards; the sisters seldom have opportunities of going into the theatre and seeing what, for instance, the modern gastrectomy looks like. How can they nurse the patient really intelligently if they cannot even imagine the state of affairs within his abdomen? How many of them have been taught intelligently how wounds heal, or when an anastomosis within the peritoneum is fully and completely healed? Nor am I in any way attacking their good work when I say also that I should like the professional moat which encloses their care of the patient filled up—their growing belief that nursing is a thing apart, and that the doctor should not intrude. I maintain that the doctor *ought* to know how to arrange pillows, how to give enemas, when to give aperients, how to look after backs. I hold up the words of Paré, "I am nurse, apothecary, and cook to my patient." The surgeon knows that to give a large enema, as is common practice, can blow a purse-string on the cæcum or a bowel anastomosis. For many years, until Hurst intervened, the enema tube was traditionally passed a long distance into the rectum where it merely coiled. The turpentine enema—still so popular—we now know stipples the mucosa with hæmorrhages and makes it swollen, red, and angry. Even the ordinary soap enema of tradition, as THE LANCET recently pointed out, has no advantage whatever over water from the tap. The knee pillow—which a surgeon introduced some 20 years ago—we now know may be responsible for that great hazard, the pulmonary embolus.

These criticisms of traditional nursing technique in no way detract from the great contributions to the care of the patient made by the sisters themselves, especially wherever there has been close team-work. We all know how much the changed methods of nursing of the head injury and the chest owe to the joint work of nurses and surgeons. We all acknowledge the contribution of the sisters in advancing theatre asepsis and technique, and their great assistance in formulating the newer

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ritual of ward dressing. I only want to point out that mere industry and accurate transcription of doctors' orders is not enough. They must be kept abreast of current advances.

THE TRAINING OF THE JUNIOR NURSE

There was a time when nursing was regarded as a divine vocation, or the result of an antenatal urge for this sort of work. Some there are with shallow surface piety who still maintain that if the nurse hasn't this spiritual urge we don't want her. But my belief, after talking to these girls, is that they hear the call of talent: they have an innate knowledge of what they will excel at, of what will give them pleasure and joy—and that after all is the final test of achievement in any activity. I would deny that they are less sincere than their forerunners in their tenderness and sympathy; they are prepared to work as hard for the very ill, and in my experience their desire to serve is as great.

We must remember they enter the wards young. What do they meet? Their welcome is certainly not a warm one. Hardly ever introduced to the doctors, they are handed the most menial of duties, come constantly under the tongue of criticism, and are tremulously sensitive lest they displease the doctor or nurse. Scorn and indifference can kill the sweetest and most enthusiastic of souls; it is frost to the flower. They have too much work to do to enjoy the pleasures of the personal nursing of the patient. The nurse *must* have time to linger, to talk and even gossip: that is the way she will get to know the little whims, gather the fears. Honest reassurance is a fundamental step in restoring the patient's health: how much do we teach her about how to talk to the patient—when to chide him, when to encourage him, and even when to act her part? We rely on her feminine intuition—whatever that may be—in the handling of men. No one can really talk intelligently and with assurance to the patient unless she understands something of the illness. That is where we doctors have been so neglectful. We do not explain to her in detail what is wrong, and what we want her to do; we are apt to chatter that a little learning may be dangerous, and that the girls might be tempted to take on too much. The best way to cure irresponsibility is to give responsibility.

It should be our aim to attract the best types of girls, including university graduates. The mould of their future teaching is now being cast. I feel that in some particulars the training of the nurse should be similar to that of doctors. Each junior nurse should have about six personal patients per ward. She should write her own histories, and have full access to the doctor's notes; she should not, as at present, have to scan them secretly. The patient is hers as much as ours. She should have to add her comments—saying why she thought the liver injection was given, explaining the purpose of the fluid-chart, the significance of the vomiting. The sister-tutor should correct these histories, and in the course of training the student nurse would cover most types of case. To take the history closely would not only teach her much about the disease but would stimulate her to turn to books for a fuller account; she would no longer be content with the sketchy details given in some of her current textbooks. Besides, such histories would be of great value to the doctor. The new patient is often flummoxed, and forgets to tell him many things; and doctors are not always able to see the relatives, particularly of children. If the nurses were trained to write histories, how helpful they could be.

As the doctor does his round, the junior nurse in charge of each patient should be at the bedside; he could do much to encourage her by telling her how neat the patient was, how happy he was with the care of the back, so that she would get some satisfaction out of her work. "When men give up saying what is charming, they give up thinking what is charming."

The junior nurse should not be kept for many months in one ward, with one type of case. Museum methods of nursing treatment should not be taught nowadays, and examiners should certainly avoid them. The nurse can always look up antiquated methods, if they are demanded. The nursing and weekly medical journals should be readily available to her. She should be able to approach the doctor direct without quaking, and should be accepted as part of his society. Some nursing conditions seem to be unnecessarily unpleasant; we had better admit that some of the work we ask nurses to do we would not do ourselves. Ask the doctor to see a bedpan in a sluice-room and see how quickly he hops out; yet we expect these girls to accept old-fashioned equipment and unpleasant smells, and if they object, we taunt them with lacking the nurse's soul. We need to introduce generally—not, as at present, in relatively few hospitals—decent ways of disposing of the excreta, and proper equipment for the washing of the bedpans. Engineers would readily design apparatus to flush pans, and to do away with the need for all this hand-washing. Even the methods of ward cleaning are absurd in 1946, when every puny hotel has its vacuum cleaners. Floor-scrubbing machines are available and save much labour. Wards of 50 patients often have only one bath, which has to be shared by the patients with fistula-in-ano and many others with discharging and healing wounds. We are very much to blame for our facile acceptance and moral approval of these primitive methods.

ADMINISTRATION

It is a pity that the reward of good nursing is an administrative appointment. Administrators are a necessity, but with the years their administration is apt to become of the armchair type. The clinical workers may justifiably grouse that they are rarely consulted. Who but the surgeon can know whether his theatre nurse is suitable, amiable, and capable of adapting herself to the team? We learnt well in the war how much the man on the job can contribute. I need only quote the words of Disraeli: "Great minds have failed because they have wanted to think alone, and disdain the study of the mass of men."

There is need for regular round-table administrative meetings with sisters' and nurses' representatives present. Let them feel that they are taking an equal part in the running of the hospital; they will be proud of its good name, and do all they can not to let their side down. Such conferences will besides offer an outlet for their grievances. They would also settle the nurses' ward appointments, and decide on those to be promoted to be sisters. This is especially important now that sisters' salaries are to be raised, and appointments should not be decided by the matron alone. The meetings would help the matron, and ease her administrative worries. Voluntary reports collected from hospital workers by their trade-union inveigh heavily against the "all powerful" dominion of the superintendent and matron. Actually their autocracy varies a great deal and there are plenty of good ones; but it would be well to remember the saying that "all power corrupts, absolute power corrupts absolutely."

THE SOCIAL SIDE

The nurses are reaping the benefits of the facilities for reabling now provided in most hospitals. They have concerts, musical evenings, plays, and play-readings, and a good number of dances. The nursing charter promises them many more things; but Cicero looks over my shoulder and reminds me that "a favour slow in being conferred causes ingratitude." The main cities need centres where the nurses can gather, entertain

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their friends for tea, and stay for the night or the week-end. The homes of many of the girls are far from their hospitals, and a complete change from hospital atmosphere is good for all. At these centres, too, there could be museums and exhibits of the latest ideas. Theatre tickets could be supplied and visits to art galleries, cathedrals, and other places of interest arranged from these centres. The plan would broaden their outlook and add many joys to their lives. Rest-homes near the sea are much needed, especially for the more elderly sisters.

LITTLE THINGS

"Life is a bundle of little things," said the *Poet at the Breakfast Table*, and some of these can be annoying. Nurses working in the outer hospitals have been promised extra transport facilities; but it is often expensive for them to come up to London. Like the Service man they have to live away from home and should be allowed Service fares. They dislike their present uniforms: these are not well cut, and matrons are hardly the people to design them. Some of the assistant nurses have a uniform which looks like a maternity gown. Young girls like to show their figures, and surely we are past thinking that is wrong. In more recent times they have had to lose their aprons; they want them back, for nothing freshens them more before a meal, after having nursed a heavy case, than a change of apron. Lastly, they feel that the dances are their own affairs, and the eye of authority watching them closely as they mince around is disturbing. Matrons are welcome, but need not sit, in uniform, on the rostrum.

Doctors seldom write or concern themselves overmuch with the details of the nursing problems; it has been left to the editorial pen to stir up opinion for improvement. "Progress," wrote Herbert Spencer, "is not an accident." With a changed outlook we may expect to attract many girls, including some university graduates with a powerful contribution to make. When they find themselves welcomed as intelligent members of a team, sympathetically helped over their toddling days, and given time for the joys of personal nursing they will be on fire with ambition. There will be no need for daily advertisements. They will say to themselves that doctors and sisters "are what they are; they wear no masks for me."

Our brains are stored with second-hand thoughts. This thought was set a-galloping by a short talk, on some advances in psychiatric methods of nursing, by Dr. Maxwell Jones.

"... Before this year ends, the schools of medicine in this country will have graduated some 25,000 physicians whose school training has been compressed into three years of 12 months each instead of the usual four years of 9 months each. About 20,000 of these men, enrolled for military service, received an additional 600 hours of training in military affairs—a burden added to the full medical curriculum—and were subjected to the restrictions of partially regimented living. I have calculated that these figures mean that, as of the present and as of years to come, at least 30 per cent. of our physicians who are under 45 years of age, i.e., the most energetic fraction of the profession and that to which we look for the urge which drives medicine forward, are men whose training has perforce resulted in greater superficiality in learning, less tenacity of retention of what was learned, and a minimum of that contemplation and discussion from which spring habits of independent thought. ... The system of accelerated medical education which was forced upon us and which was not adopted by any other of the countries at war seems to me to have had an impact which may prove to have been calamitous. Its effect may perhaps be partially neutralised if the damage is recognised and if we force ourselves to construct and organise facilities for advanced training not only for the near, but also for the long, future."—A. N. RICHARDS, vice-president of the University of Pennsylvania, *Science*, May 10, 1946, p. 575.

ACCIDENTAL LABORATORY INFECTION WITH TSUTSUGAMUSHI RICKETTSIA

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FOR the large-scale production of scrub-typhus vaccine from cotton-rats (Fulton and Joyner 1945, Buckland et al. 1945) the intranasal route of inoculation was used extensively. The risk to the laboratory personnel with this technique has been shown by accidental infection in laboratories working with murine typhus (van den Ende et al. 1943). This risk, which depends very largely on the dissemination of droplets from the respiratory tract of the animals during and for an hour after inoculation, can be prevented by the use of special inoculation cabinets (van den Ende and Hubbard 1943).

The laboratories constructed for the large-scale production of scrub-typhus vaccine were equipped with special cabinets for the inoculation of animals and for all other manipulations of infective material from which droplet dissemination could be anticipated. As a further safeguard, lactic acid aerosols (Lovelock et al. 1944) were provided in all rooms where even the slightest risk of accidental contamination of the air existed. In addition, all members of the staff wore gowns, rubber gloves, dust respirators, and eyeshields, when these were appropriate for the particular work being done.

In spite of the elaborate precautions and the careful instructions given to every member of the staff, most of whom were conspicuously conscientious throughout, four cases of accidental laboratory infection occurred: one of them during the preliminary work at the National Institute for Medical Research, and the others during large-scale vaccine production. In two of the cases infection followed accidents which were not foreseen; in the third the source of infection has not been established with certainty, but in retrospect an inhalation infection seems most likely. The fourth case was due to accidental infection from contaminated laboratory glassware and could have been prevented. The cases are of further interest in that they occurred in persons who had received full courses of immunising injections of Fulton and Joyner's (1945) vaccine, and all four made complete recoveries. The salient features are summarised in the accompanying table.

CASE 1.—A woman, aged 42, who had previously had a laboratory infection with murine typhus (OX19 in December, 1943), accidentally received what was probably an enormous inoculum on Feb. 16, 1945. She was bitten on her left thumb by a cotton-rat, which came round from its anæsthetic unexpectedly, after intranasal inoculation with a suspension of scrub-typhus rickettsiæ. The cotton-rat hung on for one or two minutes before she could shake it off. She made the wound bleed freely and soaked her hand in strong 'Dettol' solution for some five minutes.

Before this she had received four inoculations of 1 c.cm. of scrub-typhus vaccine. These had been given on Nov. 7, 14, and 28, 1944, and Jan. 5, 1945. A fifth dose of 1 c.cm. was given on Feb. 27, eleven days after the accident.

Fourteen days after the rat-bite she developed a severe generalised headache and had several rigors, her temperature rising to 103° F. The site of the last vaccine inoculation in the left upper arm became tender and swollen. Next day the scar of the rat-bite on her left thumb became red and

* Seconded to the Wellcome Foundation by the Medical Research Council.

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painful, and she had pain and tenderness in the left axilla. She was then admitted to hospital.

She was rather flushed, temperature 99·8° F and pulse-rate 84 per min. On the left thumb there was a small, injected, and slightly raised scar. There were local induration and tenderness at the site of the recent inoculation in the left upper arm, and a few small tender glands were palpable in the left axilla. Routine examination showed nothing else abnormal. The urine was normal on routine and microscopical examination. The leucocyte count was 6000 per c.mm., with a normal differential count.

For twelve days there were frequent rigors, sometimes accompanied by mild delirium. Headache was persistent. On the third day patient developed a dry cough, with moist sounds at both bases. She became critically ill on the sixth day, with a faint heliotrope cyanosis and a typical mild typhus rash consisting of subcuticular mottling, faint macules, and petechiæ on the limbs and trunk. This began to fade after two days and disappeared on the tenth day. Except in the left axilla, there was no glandular enlargement, and the spleen was never palpable.

On the seventh day of the fever *Proteus* OXK was agglutinated by her serum in a dilution of 1/160. On the thirteenth day the titre had risen to 1/50,000.

The treatment was symptomatic, abundant fluids with glucose being given throughout. Patient was well aware of the nature of her illness from its onset and coöperated excellently.

After the fourteenth day she was apyrexial, and her general condition improved dramatically. The headache disappeared, and after four days she was well enought to sit up in a chair. Two weeks later she left hospital, and after five weeks' convalescence she was perfectly well.

CASE 2.—A man, aged 28, a highly skilled technician who had previously had a laboratory infection of murine typhus in 1942, became ill with severe headache and malaise on June 6, 1945. He was concerned with the preparation of "seed" suspensions of scrub-typhus rickettsiæ from mouse lungs. These suspensions, which contained large numbers of virulent rickettsiæ, were being prepared for the inoculation of cotton-rats for the production of vaccine. His daily routine included the transfer of all suspensions, immediately after preparation, from centrifuge tubes to special ampoules, in which they were frozen and stored. Samples from each suspension were also plated on blood agar. For all the transfers of the material pasteur pipettes were used. A respirator and eyeshield were not worn.

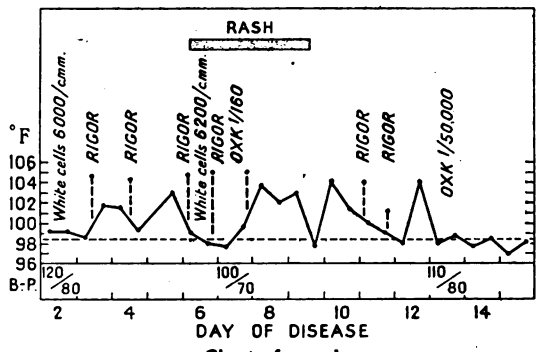

Chart of case 1.

It has been established since the onset of his illness that during such transfer bubbling is almost unavoidable. The breaking of such bubbles, especially in an open petri dish, causes a splash of droplets, often over a distance of several inches. It is highly probable that the infection resulted from the inhalation of such droplets. Patient had received five doses of 1 c.cm. of scrub-typhus vaccine on Jan. 11, 18, and 25, April 6, and June 2. He was admitted to hospital on June 9.

On admission he complained of severe headache, particularly over his eyeballs, but his general condition was very good. Examination showed a faint rosy macular rash on the trunk, slight conjunctivitis, and a faintly coated tongue. His heart, lungs, and abdomen appeared normal.

As his illness progressed the rash became more marked, particularly on the palms, and the conjunctival infection persisted. His temperature was intermittent, with numerous rigors. Six days after admission he complained of tightness in his chest, but nothing could be found on clinical examination. Delirium was slight, with some disorientation.

His blood-urea level, which was 30 mg. per 100 c.cm. on the third day after admission, rose to 60 mg. per 100 c.cm. on the tenth, and then began to fall. His blood-pressure, which was 120/80 on the third day, fell to 95/60 on the eighth day and then rose to normal levels. The rash disappeared on the eighth day after his admission.

Agglutinins for *Proteus* OXK were present in his serum to a titre of 1/160 during the first ten days of his illness; on the thirteenth day it had risen to 1/320, and on the sixteenth to 1/640.

SALIENT CLINICAL FEATURES

Clinical features	Case 1	Case 2	Case 3	Case 4
Age (yr.)	42	28	24	26
Sex	Female	Male	Female	Female
Duration from infection to onset of pyrexia	14 days	Unknown	11 days	? 17 days
Duration of pyrexia ..	14 days	16 days	15 days	? 23 days (definitely 19 days)
Rigors	Numerous	Numerous	At onset only	Nil
Day of onset of rash ..	6th	Unknown	5th	6th
Duration of rash (days) ..	4	More than 8	3	9
Severity of rash	Slight	Severe	Slight	Very severe
Delirium	Mild	Slight	Very slight	Severe
Chest signs and symptoms	3rd day: cough, râles, cyanosis	8th day: cough, no physical signs	6th day: cough, râles	6th day: cough, no physical signs
Onset symptoms	Headache, rigors, pyrexia	Headache, rigors, pyrexia, nasal catarrh	Headache, rigors, pyrexia, nasal catarrh, earache	Headache, pyrexia
Onset of local lesion from date of infection	15th day	None	10th day	Unknown
Adenitis	Local (left axilla)	..	Nil	Submental; right axilla (severe)
Splenomegaly	Nil	..	Nil	Nil
White cells per c.mm. ..	2nd day 6000 6th day 6200	.. ..	4th day 4200 11th day 5300	11th day 11,200 ..
Maximal blood-urea level (mg. per 100 c.cm.)	..	60 on 13th day	35 on 3rd day	38 on 10th day
Minimal blood-pressure (mm. Hg)	100/70 on 7th day	95/60 on 11th day	90/55 on 10th day	95/60 on 14th day, on admission 90/60

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CASE 3.—A woman, aged 24, was preparing for the intranasal inoculation of cotton-rats in an inoculation cabinet, when a graduated pasteur pipette, which had just been emptied of a highly virulent suspension of *R. orientalis*, accidentally broke. The broken end of the pipette pierced the rubber glove and injured the skin on the medial aspect of the left index finger.

A tourniquet of string was applied to the base of the finger within thirty seconds of the accident. The wound was excised immediately (within five minutes), free bleeding promoted, and an antiseptic applied. The wound healed almost completely with local application of sulphathiazole and dry dressings.

An injection of 1 c.cm. of scrub-typhus vaccine was given immediately after the accident, and on the same day 10 c.cm., in divided doses, of a phenolised serum from a rabbit convalescent from scrub-typhus. Next day she received intramuscularly 12 c.cm. of phenolised serum taken from case 2 during the third week of convalescence.

She fell ill with headache and rigors on the eleventh day after her accident and was admitted to hospital on July 25, 1945, the third day of her illness.

On admission she complained of severe headache, particularly over her eyeballs. She appeared seriously ill, with intense photophobia and conjunctival injection. Temperature 104° F and pulse-rate 84 per min.—a relative bradycardia for the temperature. Her chest was normal, and clinical examination of her heart showed nothing abnormal; blood-pressure 130/80. Abdomen normal; spleen not palpable; no lymph-gland enlargement. Tongue dry and slightly furred and

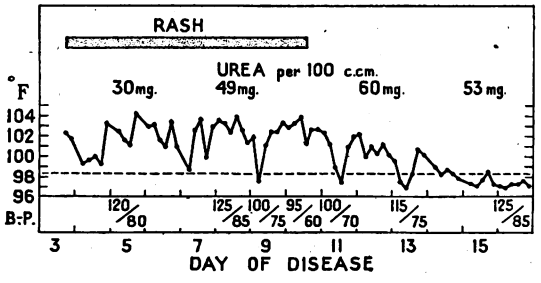

Chart of case 2.

breath foul. There was no visible rash, but there was a small papule about 1 cm. in diameter on the left index finger. This lesion was red and tender and involved the area which had been excised at the time of the accidental inoculation.

The day after admission the urine contained a few pus cells and a light cloud of albumin. Blood-urea 39 mg. per 100 c.cm. and a blood-count showed Hb 72% (Haldane scale), with colour-index 0·76, white cells 4200 per c.mm., with a normal differential count.

The rash began to appear two days after admission (fifth day of illness) and consisted of faint pink macules 0·5–1·0 cm. in diameter, involving first the lower part of the trunk and later both arms and hands, including the palms, and both legs and shins. It was very faint and had entirely disappeared in three days. At the time of appearance of the rash her face was very suffused, eyes bloodshot, photophobia severe, tongue heavily coated, dry, dark brown, and very tremulous. Nausea, abdominal discomfort, and anorexia were pronounced, and she vomited twice. However, delirium was not severe and was present only at night. By day she was bright and cheerful and at times even euphoric. She coöperated well with the nursing staff throughout her illness.

Her blood-pressure fell steadily to 90/55 on the eighth day of admission and then began to rise. At no time was her blood-urea level above 35 mg. per 100 c.cm. On the day of admission the OXK agglutination test was positive at 1/40, next day (fourth day of illness) 1/160, and on Aug. 8, two days after her temperature had returned to normal, the titre had dropped to 1/80.

Treatment consisted of light diet and fluids by mouth ad lib. 'Pethidine' 100 mg. by injection was very effective in alleviating headache. She was discharged to a convalescent home five weeks after admission to hospital.

CASE 4.—A woman, aged 26, who, about three weeks before admission to hospital, washed some petri dishes which had contained scrub-typhus infected cotton-rat lungs and were therefore heavily contaminated with rickettsiæ. According to the rules of the laboratory these should not have been touched by hand until they had been autoclaved. She realised

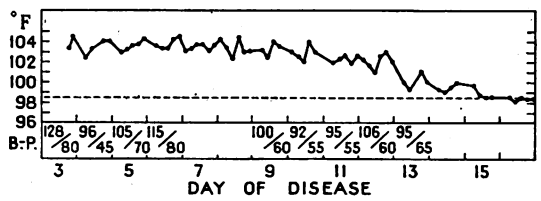

Chart of case 3.

her error but did not report the accident. The exact day on which this happened is unknown but was, according to her account, about seventeen days before the onset of general malaise which marked the beginning of her illness. She was admitted to hospital on Nov. 3, 1945, the fourth day of her illness.

On admission she was very ill, drowsy, and disoriented. There was no rash and no splenic enlargement. Heart and lungs were normal. There was a small soft abrasion on her lower lip, which she had had for some time, but on the middle finger of her right hand there was a recent small raised tender lesion about 1 cm. in diameter. Later there was a large tender mass of glands in the right axilla, and it is almost certain that the site of infection was an abrasion at the base of the finger-nail. Her blood-pressure on admission was 90/60.

Her condition steadily deteriorated, though her blood-pressure rose after admission and did not fall again until after the first week of her stay in hospital.

The rash appeared on Nov. 5 (sixth day of illness) and consisted of deep subcuticular mottling, with maculæ and petechiæ. As her mental and physical conditions were deteriorating, and she was unable to take fluid by mouth, a slow intravenous glucose saline was started on Nov. 8. In the next forty-eight hours she was given 90 oz. of glucose saline and 20 oz. of plasma intravenously.

Her temperature was 101° F on admission, reached 103·4° on Nov. 7, and stayed at this level until the 15th, was then intermittent until the 22nd, after which it remained normal. Her pulse-rate, which appeared to be a more accurate indicator of her general condition, was maximal at 130 per min. on the 14th and 15th and then fell steadily, reaching 80 on the 22nd. A dry unproductive cough began on the sixth day of the illness (Nov. 5), when her respiration-rate rose to 30 per min., but no physical signs could be found in the chest.

On the seventh and tenth days of illness her serum OXK titre was nil; but it rose to 1/1280 on the twenty-second day and 1/3000 on the twenty-fourth.

During the early part of her illness her urine contained a fair amount of albumin and a trace of blood, but this had disappeared by the eighteenth day. She made a complete recovery.

The diagnosis was in all cases established by the Weil-Felix test—*Proteus* OXK agglutinin appearing to a titre of 1/160 or higher during the illness. In three cases the test was repeated at short intervals. In one of these the diagnostic serological response developed on the fourth day, but in the others it was delayed beyond the tenth day. In the case showing the early response the maximal recorded titre was only 1/160, but the diagnosis was confirmed by the isolation of the causal rickettsia.

In cases 3 and 4 the isolation of *R. orientalis* was attempted. In case 3, on the second day of her illness, fresh venous blood was injected intraperitoneally into 3 guineapigs (1–5 c.cm.) and 6 mice (0·1–0·5 c.cm.) at the bedside. About 1 c.cm. of blood was also allowed to clot. Half an hour later the whole clot was ground up in normal horse-serum broth and used in 0·1 c.cm. dose to inoculate 20 mice intranasally under ether-chloroform anæsthesia.

The guineapigs showed no pyrexial response, but in 1 of them which was killed on the fifteenth day necropsy showed peritoneal and pleural effusions, and rickettsiæ were demonstrable in smears of the spleen. The peritoneal fluid from this animal was injected intraperitoneally into 2 other guineapigs; 1 of these developed fever of 105·8° F on the eighth day. With the next passage of the peritoneal fluid a fatal febrile (105·8° F and 106·2° F) illness was produced in both animals injected.

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The passage of brain, whole blood, or blood-clot of the first guineapig to other animals did not result in the establishment of the strain.

The mice that had received fresh blood intraperitoneally were all severely ill on the twelfth day. They were killed from the twelfth to fourteenth day after inoculation. At necropsy all showed characteristic pleural and peritoneal effusions, and rickettsiæ were demonstrable in smears of the spleens. It has been possible to maintain this strain by serial passage of peritoneal fluid or spleen emulsions. Deaths in later passages regularly occurred on the tenth to fourteenth day after infection. An emulsion of the brain of a mouse of the second passage was capable of infecting further mice when injected intracerebrally. The illness following intracerebral inoculation was, however, seldom fatal.

Of the 20 mice inoculated intranasally, 6 died early (from first to fourth day), and these deaths were regarded as probably non-specific; the remainder were ill by the fifth to seventh day after inoculation. Mice killed on each of the days from the fifth to seventh showed complete or almost complete consolidation of the lungs, but the presence of rickettsiæ in impression smears was doubtful. The consolidated lungs were emulsified in horse-serum broth and used for inoculation of further mice. The passages could thereafter be maintained in unbroken series. By the third passage mice were dying on the fifth to sixth day with complete lung consolidation and so many rickettsiæ in the smears that they could be used for the preparation of seed suspensions in the large-scale manufacture of vaccine.

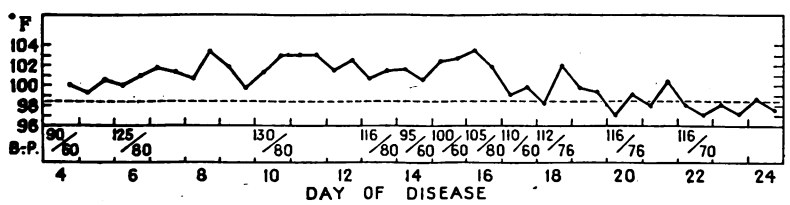

Chart of case 4.

R. orientalis was also isolated from the blood of case 4 on the sixth day of her illness. Fresh whole blood injected intraperitoneally into guineapigs caused peritonitis in one of them, and *R. orientalis* could be demonstrated in smears. One of 6 mice which received whole blood of the patient intraperitoneally was ill after eight days. It was killed and necropsy showed the characteristic peritoneal effusion of scrub-typhus infection, splenomegaly, and rickettsiæ in spleen smears. Isolation in mice inoculated by the intranasal route was not attempted in this case.

Complement-fixation tests with formolised cotton-rat lung scrub-typhus vaccine as antigen (Henderson-Bègg and Fulton 1946) were performed with serum samples of all patients.

DISCUSSION

These cases of accidental laboratory infection are important because they demonstrate where the precautions taken in the laboratory were inadequate. Two of the accidents that led to infection were unforeseen—a bite from an infected rat and an injury from a broken pipette. It has been possible to avoid the repetition of the former accident by adopting single wire-mesh cages, which were not initially available, to house the rats. Into these the rats were placed immediately after inoculation and before recovery from the anæsthetic. The complete avoidance of accidental breakages of infected glassware has been impossible, but the care needed especially with the manipulation of fragile pipettes should be emphasised repeatedly.

The infection of case 4 was avoidable, and in fact exposure to infection in this case resulted from a breakdown of regulations. The subject, aware of her error, failed to notify the accident, so that prophylactic treatment could not be attempted.

Case 2 was probably infected by the inhalation of droplets disseminated by breaking of bubbles during pipetting. This danger, which should be obvious when highly infective material is handled, had not been sufficiently realised. It has since been possible to avoid repetition of the accident by instructing the workers to wear rubber gloves, dust respirators, and eye-shields.

All the patients had received full immunising courses of Fulton and Joyner's scrub-typhus vaccine. The vaccination has not afforded absolute protection. It is, however, likely that the infecting doses acquired in the laboratory were far larger than those encountered during natural infection from the mite. In fact, previously reported laboratory infections with *R. orientalis* have been fatal in 3 of 5 cases (unpublished observations). The vaccine may, therefore, have afforded a significant degree of protection.

The isolation of the causal rickettsiæ by three different methods from case 3 is of interest particularly because of the ease with which the ætiological agent was recovered in the lungs of mice after intranasal inoculation. This may have been because the infection was acquired from rickettsiæ adapted to mouse lung by repeated passage or simply because of the large numbers which were present in the circulating blood of the patient. The isolation of *R. prowazeki* from the blood of patients suffering from classical or murine typhus after previous immunisation with purified vaccines has been shown to be difficult. The ease of isolation in cases 3 and 4 may therefore indicate relatively ineffective immunisation. It may, on the other hand, indicate that the blood-stream infection is greater in scrub-typhus than in classical typhus, or simply that the guineapig and mouse are more susceptible to infection with *R. orientalis* than with *R. prowazeki*.

SUMMARY

Four cases of accidental laboratory infection with scrub-typhus are reported. Their occurrence in relation to precautionary measures taken in the laboratory is discussed.

From two cases the causal rickettsia was isolated in mice and guineapigs by intraperitoneal inoculation. In one of them isolation succeeded also in mice which received ground blood-clot intranasally.

The diagnosis could be established by *Proteus* OXK agglutination tests and complement fixation with formolised scrub-typhus antigen.

All the patients had previously received immunising injections of scrub-typhus vaccine prepared from cotton-rats. Their complete recovery suggests that the vaccine had some protective value.

We wish to thank Major A. Henderson-Begg for his help especially for performing the complement-fixation test; Major-General A. G. Biggam, C.B.; Major-General L. T. Poole, C.B.; Dr. F. Fulton and Captain A. Dudgeon for their assistance; Dr. E. R. Jones, of the Kent county laboratory, Maidstone, for OXK agglutination tests in cases 3 and 4; Dr. W. M. Ramsden and Dr. S. J. Firth, for permission to include two of the cases, and the staffs of the various hospitals, whose interest and attention ensured the speedy recovery of the patients.

REFERENCES

Buckland, F. E., Dudgeon, A., Edward, D. G. ff., Henderson-Begg, A., MacCallum, F. O., Niven, J. S. F., Rowlands, I. W., van den Ende, M., Bargmann, H. E., Curtis, E. E., Shepherd, M. A. (1945) *Lancet*, ii, 734.
Fulton, F., Joyner, L. (1945) *Ibid*, p. 729.
Henderson-Begg, A., Fulton, F. (1946) *J. Path. Bact.* (in the press).
Lovelock, J. E., Lidwell, O. M., Raymond, W. F. (1944) *Nature, Lond.* **153**, 20, 743.
van den Ende, M., Hubbard, A. J. G. (1943) *J. Hyg., Camb.* **43**, 189.
— Stuart-Harris, C. H., Harries, E. H. R., Steigman, A. J., Cruickshank, R. (1943) *Lancet*, i, 328.

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THE CONTROL OF POLIOMYELITIS

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RECENT attempts to determine the mode of transmission of poliomyelitis have yielded results which suggest the possibility of limiting outbreaks of the disease by the application of preventive measures. Such a possibility is particularly welcome to public-health authorities, who have hitherto been helpless in combating the disease.

The studies of Pearson and Rendtorff (1945a and b), Pearson et al. (1945), Paul et al. (1940), and other investigators have shown that the virus responsible for poliomyelitis can be recovered from the stools of patients in the infective stage, from abortive cases, and from healthy contacts. Kling et al. (1939) found the virus in drinking-water, and there is evidence that the disease can be transmitted by infected food. Sabin and Ward (1942), Paul and Trask (1941), and Toomey et al. (1941) have definitely incriminated the house-fly as a further means of spread. Howard and Clark (1912), summarising experiments on the transmission of poliomyelitis by insects, excluded mosquitoes and lice but stated that bed-bugs took up the virus from the blood of infected monkeys and maintained it in a living state for seven days. The house-fly (*Musca domestica*) carried the virus in an active state for several days on the body surface and for several hours in the intestinal tract. Bang and Glaser (1943) have found, however, that the virus tends to disappear from the bodies of flies rather than to multiply.

As a result of the study of these findings an experimental scheme for the epidemiological control of poliomyelitis was devised. Briefly the procedure consisted of:

1. Immediate isolation of cases in hospital, with thorough disinfection of their homes, &c.
2. Quarantine of family contacts for a week, and partial quarantine for two weeks thereafter.
3. Information to doctors and the public in the area affected, so that all cases of pyrexial illness might be seen at once.
4. Exclusion, from schools and other public places, of the children from the area.
5. Propaganda by radio, press, and leaflets, with follow-up by public-health personnel, advising (*a*) care in the handling of food, especially in its protection from fly contamination, (*b*) the boiling of milk, and (*c*) frequent careful washing of the hands in running water, especially after visiting the lavatory and particularly by those handling and preparing food.
6. In districts where a piped water-supply is not available, water used for all domestic purposes to be boiled.
7. Treatment of fæces with disinfectants. (In rural districts fæces to be covered with fresh earth to prevent access by flies.)
8. Destruction of flies in the area with D.D.T.
9. Notification of all cases by wire or telephone, and progress reports to the Department of Local Government and Public Health, Dublin.

The occurrence of a small outbreak of the disease in county Dublin, with an extension to county Clare, presented an opportunity of testing the application of this technique.

COUNTY DUBLIN AREA NO. 1

The outbreak began on Sept. 15, 1945, when five cases were notified from a residential area in the Dublin suburbs. The cases all showed definite symptoms of acute poliomyelitis, with onset in the same week—i.e., Sept. 15–22. The patients all lived within a short distance of one another but had no other contact. Preliminary investigations revealed a common milk-supply to the homes of the five patients, but the apparent significance of this fact was largely discounted because the dairy concerned supplied 80% of the houses in the district. Four of the patients were males, aged 15 years, 32 years (died), 16 years, and 30 years, and one was a girl, aged 4 years. The area is sharply defined and is about $1^1/_2$ square miles in extent. The measures previously outlined in the experimental scheme of control were applied.

The method of employing D.D.T. was as follows: The preparation was used in a kerosene solution. Particular attention was paid to the five houses affected, which were treated thoroughly inside with a 2% solution. The gardens and grounds were also carefully sprayed with a 5% solution. Every house in the area was treated with D.D.T. spray in a somewhat less elaborate manner than in houses in which cases had occurred, but every compost heap, manure heap, or refuse dump, where flies could breed, was sprayed. Some ponds were also treated with the oily solution. Special attention was given to dairy premises, where a 5% solution was used throughout buildings and on manure heaps. The bellies of cows were sprayed, as they are a favourite feeding-ground of stomoxys.

Specimens of dead flies were collected from a few selected houses after the D.D.T. spraying. Only the two common varieties of house-fly were found: *Musca domestica* and *Fannia canicularis*. In one house a dung beetle was recovered with the dead flies from a kitchen, showing a direct connexion with a garden manure heap. Since facilities for virus examination were not available, search for a positive source of infection was not carried out.

COUNTY CLARE

On Sept. 15, 1945, notification of a case of poliomyelitis was received by wire from the county medical officer of county Clare. The patient was a domestic servant, aged 20, who worked in a house close to the homes of the other cases in county Dublin area no. 1. She had gone to Clare, almost 200 miles away, on holiday and was actually incubating the disease during her journey. The first signs of illness had developed on Aug. 29, but she was not seen by a doctor until Sept. 12, when paralysis had become evident. This case was followed by four others, two (females, aged 32 and 11 years) being in the same rural district, and two outside the district (1 male, aged $7^1/_2$ years, and 1 female, aged 7 years). No direct connexion was established between any of the five cases.

Dr. G. P. McCarthy, county medical officer of county Clare, applied, in the districts concerned, preventive measures similar to those instituted in county Dublin area no. 1. The areas being rural, additional precautions were advised, including the boiling of all water before any domestic use, and the disinfection and covering with earth of all excreta. The disinfectants used were chloride of lime or coal-tar derivatives.

COUNTY DUBLIN AREA NO. 2

On Sept. 22, 1945, notification was received of a case of poliomyelitis in a boy, aged 2 years, a patient in an Irish Red-Cross tuberculosis preventorium. The child had been in the institution for over five weeks, and, except for a visit from two aunts from England about ten days before the development of his symptoms, had had no outside contacts. Similar preventive measures were adopted. These included thorough treatment of the institution with D.D.T. spray and of the surrounding farmhouses and of manure heaps within a radius of half a mile. The nurses were warned to take precautions against the possible spread of the disease by droplet infection, including contamination of the hands in guarding coughs and sneezes.

COUNTY DUBLIN AREA NO. 3

On Sept. 29, 1945, a case was notified from a thickly populated residential area. Precautionary measures were immediately applied in each house on the road in which the case had occurred and throughout the adjoin-

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ing district (3/4 mile square). This included, in close proximity, a boarding-school for young boys, which had been affected in a previous epidemic of poliomyelitis in 1942–43. Special instructions, similar to those in the next case, were given to the headmaster of this school.

COUNTY DUBLIN AREA NO. 4

On Oct. 19, 1945, a case was notified from a large public boarding-school situated in the Dublin mountains in the same rural district as the preventorium (case 3). The patient, a boy aged 15½ years, had not left the school for some weeks and was not in contact with any known case. He was isolated at once and the control scheme applied, with the following additional provisions:

1. All table and cooking utensils were immersed in heavily chlorinated water before being put through the washing machine.
2. Drinking-water, which came from a private reservoir, was chlorinated.
3. All nose, throat, and dental operations were postponed.
4. All visits to boys were forbidden for three weeks.
5. Any additional strain from games or farm work (a feature of the school) was avoided in the case of the less robust boys. Further instructions were given to the teachers, who lived outside the school, to enable them to avoid carrying infection either to their homes or into the school. Their homes were visited and sprayed with D.D.T.
6. Leaflet instruction, which included information on prevention of droplet infection, was also given to the boys.

In addition, the area within a mile of the school was visited by D.D.T. squads, and houses, privies, and manure heaps were sprayed. Leaflet instruction was also given to householders in this area.

COMMENT

Poliomyelitis is so universally dreaded that the public will submit to any scheme, no matter how troublesome, if they think that it will afford protection. In our experience the public-health personnel were made welcome, and the utmost coöperation was afforded everywhere. As it was impossible to carry out a control experiment, and in view of the epidemiological nature of the disease, the results, though encouraging, are not regarded as any proof of the success of the method. The technique which we have outlined and the account of its application are published as evidence of the practicability of such a measure, but no claim is being made regarding its efficacy. The reassuring effect of the measures on the community established their psychological worth. It is hoped that other trials of this procedure, preferably with variations, will be carried out under differing conditions.

The scheme was made possible because of a plentiful supply of D.D.T. This had been manufactured in Ireland for the Department of Local Government and Public Health and had been available for public-health purposes for many months. The health department of the Dublin Corporation coöperated by furnishing the squads of trained D.D.T. operators for work in county Dublin. This test was carried out by the Department of Local Government and Public Health (field work being supervised by J. D. M.), since the central health authority could employ a wider approach than that possible for a smaller public-health unit.

Since the experiment was finished a circular has been sent to each city and county medical officer in Eire concerning the technique, and approval has been given for the free provision of a D.D.T. service and disinfectants, such as chloride of lime, potassium permanganate, &c., for use on excrement Sanitary squads in Irish cities and in many counties are already trained in D.D.T. technique as part of their routine public-health work. Personnel not already trained are being given courses.

The detailed study by Pearson et al. (1945), of the University of Michigan, on outbreaks of sporadic cases in farms, villages, and small towns, and on an epidemic in a large town, has shown that the virus has been isolated most frequently from the fæces of persons who were close family contacts with a known paralytic case; less frequently from those with more remote contact; and very seldom among those who had no connexion with such a case. They were convinced that infection was from case to case, whether clinical or sub-clinical, and that the control of the disease depended on early diagnosis and the management of contacts. These findings, with the added possibility of fly-borne and other modes of infection, show clearly that control measures must not overlook any possible means of spread (*Lancet* 1945). It is suggested that the procedure at present applicable throughout Eire attempts to cover practically every means of transmission now known.

SUMMARY

An experimental procedure devised for the control of poliomyelitis has been applied during a small epidemic.

The results, though encouraging, do not establish any claim for the efficacy of the procedure.

We wish to thank Dr. F. C. Ward, parliamentary secretary to the Minister for Local Government and Public Health, for permission to publish this paper; Dr. G. P. McCarthy, county medical officer of health, county Clare, Commissioner D. J. O'Donovan, of the Dublin county council, and Dr. J. A. Harbison, medical officer of county Dublin, for their help; Dr. P. J. Hernon, city manager, Dublin, Dr. M. J. Russell, city medical officer, Dublin, and the sanitary squads of Dublin Corporation Health Department, for their coöperation; and Dr. B. P. Beirne, of the department of zoology, Dublin University, for entomological advice and assistance.

REFERENCES

Bang, F. B., Glaser, R. W. (1943) *Amer. J. Hyg.* **37**, 320.
Howard, R. A., Clark, B. (1912) *J. exp. Med.* **16**, 850.
Kling, C. (1939) *Int. Bull. econ. med. Res.* A **40**, 161.
— Olin, G., Magnusson, J. H., Gard, S. (1939) *Bull. Acad. Méd. Paris*, **121**, 826.
Lancet (1945) ii, 278.
Paul, J. R., Trask, J. D. (1941) *J. exp. Med.* **73**, 453.
— — Gard, S. (1940) *Ibid*, **71**, 765.
Pearson, H. E., Rendtorff, R. C. (1945a) *Amer. J. Hyg.* **41**, 164.
— — (1945b) *Ibid*, p. 179.
— — Brown, A. B. (1945) *Ibid*, **41**, 188.
Sabin, A. B., Ward, R. (1942) *Science*, **94**, 590; **95**, 300.
Toomey, J. A., Takacs, W. S., Tischer, L. A. (1941) *Proc. Soc. exp. Biol., N.Y.* **48**, 637.

PIN AND GRAFT ARTHRODESIS FOR OSTEO-ARTHRITIS OF THE HIP *

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SUBTROCHANTERIC osteotomy, arthroplasty, and arthrodesis are the three popular surgical procedures in the treatment of osteo-arthritis of the hip.

McMurray's subtrochanteric osteotomy has the advantage of simplicity and is associated with little shock, and for elderly people it has been regarded as the treatment of choice. It has, however, the disadvantages which are associated with the wearing of a long plaster spica, not the least of which is knee stiffness, which often ensues in old people. Also, though the pain in the hip can often be relieved, such relief is commonly only temporary, and within a year or two pain may recur.

Bony arthrodesis of the hip is the one treatment certain to cure the hip pain permanently, but owing to the severity of the operation one hesitates to perform it in anyone aged over 60. Simple fixation of the hip with a large Smith-Petersen nail is sometimes done in these elderly people, but even with an inert metal the adjacent bone is absorbed owing to the physical pressure exerted by the nail, and soon hip movement and pain recur.

* Based on a clinical lecture to Glasgow Medico-Chirurgical Society on Oct. 26, 1945.

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After experience gained in the use of a fibular graft combined with a Smith-Petersen nail in intracapsular fracture of the neck of the femur, it occurred to me that a similar technique might be applied to produce an arthrodesis of the hip in old people. Such an operation—namely, fixation of the hip with a Smith-Petersen nail and fibular graft alone—has now been done in 25 cases of osteo-arthritis of the hip during the last four years. All the patients had advanced osteo-arthritis of one hip, and in some a McMurray's osteotomy had previously been done, with temporary alleviation of the pain. All the patients were regarded as unsuitable for open arthrodesis, and their ages ranged from 51 to 84.

Work on similar lines has been carried on simultaneously by Harris,[1] of Toronto, who published a description of a similar technique of arthrodesis of the hip in 1943. Harris, however, used twin tibial grafts side by side placed above the nail.

TECHNIQUE OF OPERATION

To begin with, errors in technique and in after-treatment were made, but the following procedure has now been adopted.

The patient's skin is prepared from the waist to the foot on the affected side. A spinal anæsthetic of 'Nupercaine' 3 c.cm. is given, and the patient is then placed on an orthopædic table with the legs bound to the foot-pieces. The hip deformity is corrected so far as possible, external rotation being the one deformity which nearly always remains. A halfpenny is held against the trochanter during the preliminary radiography. The 1-in. diameter of the halfpenny is seen magnified on the anteroposterior radiogram; therefore a corresponding magnification of the bone shadows can be allowed for. An assistant calculates how far from the vastus lateralis ridge at the base of the greater trochanter the preliminary hole in the centre of the femur has to be made. A guide wire is then inserted; and, when it is correctly placed low in the neck of the femur, a stainless-steel Smith-Petersen arthrodesis nail of appropriate length is inserted. The ideal position of the nail is where it just penetrates through the inner table of the pelvis. Owing to the impossibility of internally rotating the femur in most cases one has generally little choice but to do this.

While radiograms are being taken and developed the fibular graft is cut. It should be taken from the lower half of the shaft to avoid excessive bleeding. If cut directly with bone shears the fibula generally splits; so the shaft should be weakened beforehand by drilling three holes fanwise at either line of section. The graft should be about as long as the nail—usually 6 in.

With the nail in place, a guide wire is placed in its hollow axis to act as a guide for the drill which is to make the tunnel for the graft. Three diameters of twist drill, $^1/_2$ in., $^7/_{16}$ in., and $^3/_8$ in., are needed to correspond to the possible variations in size of the fibula. Each drill is 9 in. long, so that the handle of the brace is not blocked by the thigh as the instrument is rotated. A collar on the drill is fixed to mark the desired depth of penetration, which should correspond exactly to the length of the nail. The drill is inserted above the nail exactly parallel to the guide wire until the collar on the drill is at the level of the head of the nail. In withdrawing the drill it should still be rotated in a clockwise fashion so that no bone drillings are left behind.

The crucial part of the operation is the insertion of the fibular graft intact along this tunnel. As the bone near the osteo-arthritic hip is exceedingly dense, a slight misfit will lead to shattering of the graft, and a bony fusion will not be obtained.

Before the graft is inserted, the ridges on the fibula are removed with a sharp gouge and hammer until the whole graft can be just passed through a hole in a gauge consisting of a piece of 'Perspex' or metal $^9/_{16}$ in. thick in which three holes are drilled corresponding to the three sizes of drill used.

Once an accurate fit of the graft is assured, it can be tapped along the tunnel, the guide wire still being retained in place to indicate the line of insertion. It is desirable to insert a cross-pin to prevent extrusion of the nail. The wound is then closed and the patient returned to bed.

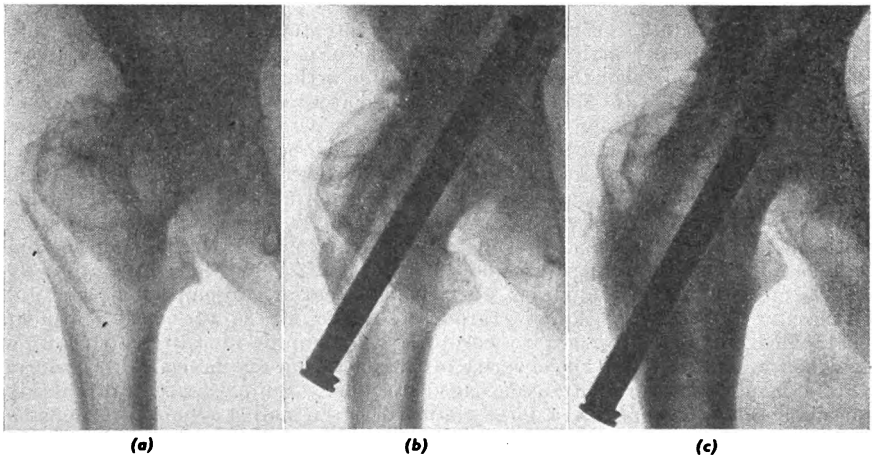
Two or three days after the operation a short spica plaster is applied and knee movements are begun. The patient is allowed up on crutches on the fifth day. The plaster and crutches are retained for three months, and thereafter weight-bearing is allowed. By this time no movement of the hip is possible and pain is absent, though it takes about a year for the patient to recover all his former activity and strength. The gratitude of a pensioner who has thus been relieved of his pain has to be seen to be believed.

Even with a short plaster spica flexion of the knee beyond a right angle is difficult, but the full range of knee movement soon returns if the first 90° of movement is kept up from the start.

In some of the early cases certain errors were made. Owing to the density of the head the guide wire may bend as it is inserted. Undue force should not be used in placing the wire, and it should be withdrawn once the nail has been driven in about 2 in. The accurate fitting of the graft is undoubtedly the critical part of the operation. In some cases where a gauge was not used the graft shattered; and, though the broken fragments of graft were pushed across the joint, bony fusion did not take place, and some degree of movement and pain developed.

During the first few weeks the nail holds the hip firmly; meantime the graft is relatively loose. As the nail loosens its grip, the graft becomes firm and

1. Harris, R. J. *Surg. Clin. N. Amer.* 1943, **23**, 1412.



(a) (b) (c)

Osteo-arthritis of hip, with old deformed head of femur, in a woman aged 64: (a) before operation; (b) 3 months after insertion of Smith-Petersen nail and fibular graft; note absorption of bone round nail in contrast with graft, which shows no such reaction; nail penetrates inner cortex of pelvis, but this is demonstrable only in an oblique view; (c) 3 years after operation; note persistent absorption of bone round nail and some extrusion of nail; graft is now an integral part of local bony structure; though complete bony fusion of hip appears to have taken place, bony arthrodesis is probably confined to upper part of hip near graft.

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takes over the function originally assigned to the nail. During this period of transference of responsibility from the nail to the graft there is a danger of too much mobility of the hip developing, and for this reason a short spica plaster is desirable. In one case treated without a spica there was no fusion.

A fibular graft is preferable to a tibial graft, for the former is easily rounded to a cylindrical shape; and, as it contains all the elements of bone and has not the dense cortical structure of the tibia, it makes and behaves as an ideal graft. In old people regeneration in the gap left in the fibula does not occur, but the loss of this part of the fibula seems to cause no weakness. Some œdema of the ankle lasts for a few months and is controlled with an elastic stocking.

CONTRA-INDICATIONS

These are similar to those for an ordinary open arthrodesis—namely, severe arthritis of both hips and severe lumbar arthritis. There is also a limit to the weight of the patient whose hip can be successfully fixed by a pin and fibular graft. A woman weighing 19 st. was treated in this way, but within six months the pin was loose, and the graft was broken and partly absorbed.

INDICATIONS

This operation is specially indicated for osteo-arthritis of the hip in any elderly patient. It can also be used in cases in which an unsuccessful open arthrodesis has been done, and in pinned fractures of the neck of the femur which have developed aseptic necrosis and painful arthritis.

RESULTS

In the past four years I have treated 25 cases of osteo-arthritis of the hip by arthrodesis with a Smith-Petersen pin and fibular graft. No attempt has been made to assess the results on a percentage basis, for the procedure was new and experimental, and technical errors were made in the early cases. Where the procedure described was followed out, however, all cases developed a solid fusion, except the above-mentioned patient who weighed 19 st. There was no mortality and no infection in any of the cases.

SURVIVAL OF PENICILLIN-SENSITIVE ORGANISMS IN DRIED PENICILLIN

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THE sterility testing of penicillin has all the difficulties associated with the testing of a highly bacteriostatic substance. The Therapeutic Substances Act Regulations, 1944, do not give any directions in this matter but leave much to the discretion of the manufacturer. Since organisms exist which have all degrees of penicillin-sensitivity from completely susceptible to completely resistant it is advisable—in fact essential—to include in the medium used for these tests a penicillin-inactivating substance. Perhaps the most suitable is penicillinase, more particularly since strains of *B. subtilis* have been isolated which regularly produce in broth-culture filtrates a high concentration of penicillinase, 1 ml. of filtrate inactivating upwards of 200,000 units of penicillin.

The production of penicillin in the dried form either as powder or tablets offers, as has previously been pointed out,[1] an additional problem, since it is possible that penicillin-sensitive pathogenic organisms may survive in contact with dry penicillin and may, when the drug is dissolved, survive for a short period in contact with the penicillin solution. The reduction of the concentration of penicillin after injection into the body, due to dilution and excretion, may reduce the concentration to a level which will enable the organisms to multiply. This note will describe some experiments designed to show whether dried sensitive organisms will survive in contact with commercial dried penicillin, and whether under any conditions this mixture when dissolved and injected parenterally can infect animals.

1. Proom, H. *Brit. J. exp. Path.* 1945, **26**, 98.

EFFECT OF INJECTING A SOLUTION OF A MIXTURE OF DRIED PENICILLIN AND CULTURE INTRAVENOUSLY INTO RABBITS

Rabbit	Rabbit injected intravenously with 1 ml. of—	Minutes between solution and injection	Day of death
1	One dried culture of type I pneumococcus CN 33 reconstituted in 50 ml. broth	20	2*
2, 3, 4	One tablet of penicillin containing 10,000 units ground with one dried culture CN 33 and dissolved in 50 ml. broth	1	6
5, 6	One tablet of penicillin containing 10,000 units ground with one dried culture CN 33, 1 ml. penicillinase added, and dissolved in 50 ml. broth	1	3
7	Ditto	1	7
8	One tablet of penicillin containing 10,000 units ground with one dried culture CN 33, dissolved in 2 ml. distilled water; 1 ml. added to 25 ml. broth	20	Survived
9	Remaining 1 ml. added to 25 ml. broth containing 1 ml. penicillinase	20	Survived

* Postmortem examination of all rabbits dying showed typical septicæmia due to type I pneumococcus.

Viability of Dried Pneumococcus Mixed with Dry Penicillin.—0·2 ml. amounts of a broth suspension of virulent penicillin-sensitive type I pneumococcus, strain CN 33, were distributed into small glass tubes and dried by the freeze-dry method. Four tablets of the calcium salt of penicillin, each tablet containing 10,000 units, were ground in a sterile mortar. The dried culture from two tubes was added and the mixtures further ground and distributed into six small sterile glass tubes plugged with cotton wool. The tubes were placed in a desiccator over P_2O_5 and stored at room temperature. Tubes were removed at intervals from the desiccator and the contents emulsified in 10 ml. of broth containing 1 ml. of penicillinase, sufficient to inactivate 64,000 units of penicillin, and incubated at 37° C overnight. Growth of pneumococcus occurred overnight up to a storage interval of ten weeks, the longest interval tested.

It is evident that dried pathogenic penicillin-sensitive organisms may remain viable for a considerable time in contact with dry penicillin.

Effect of Injecting a Solution of a Mixture of Dried Penicillin and Pneumococci Intravenously into Rabbits.—One tablet of the calcium salt of penicillin, containing 10,000 units, was ground in a sterile mortar with the contents of one tube of dried pneumococcus culture CN 33. The mixture was dissolved in 50 ml. of broth and 1 ml. of solution was injected intravenously into a rabbit. This dilution is such that 1 ml. contains approximately 200 units of penicillin, which, when injected into a 2 kg. rabbit, gives an initial concentration of penicillin of the same order as with the usual human therapeutic dose. The experiment was repeated several times, penicillinase being added in some cases to inactivate the penicillin. Attention was paid to the time interval between dissolving the mixture and injecting the dilution into a rabbit. The results are shown in the table.

It is apparent that in this particular instance the mixture of organisms and penicillin injected into a rabbit within as short a period as possible after solution will uniformly kill the rabbit; if, however, the penicillin and organisms are left standing for a short time the rabbit will survive.

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DISCUSSION

These few experiments show that penicillin-sensitive organisms may survive in contact with commercial dried penicillin for a considerable time. Also that, under certain conditions, these mixtures when dissolved and injected into animals may cause a fatal infection. In this particular case when the solution had been allowed to stand for a short time the mixture was no longer infective, but other pathogenic species or strains more resistant to penicillin may remain viable for longer periods.

It is not suggested that the survival of organisms present in the material is a serious risk in the use of penicillin; experience has shown that this is not the case. However, to eliminate as far as possible all risk, it is advisable to use a sterility test which will indicate the presence of any viable penicillin-sensitive organisms in the dried penicillin. Also, it is clearly necessary for the clinician to use the same aseptic precautions for dried penicillin as for any other substance for parenteral injection.

SUMMARY

Dried pathogenic penicillin-sensitive organisms may remain viable for a considerable period—at least 10 weeks—in contact with commercial dried penicillin. This mixture when dissolved and injected into animals may cause infection.

In practice the risk of infection from contaminated dried penicillin is small, but it is sufficient to make it advisable to test the sterility of dried penicillin before use.

Reviews of Books

Topley and Wilson's Principles of Bacteriology and Immunity

(3rd ed.) Revised by G. S. WILSON, M.D., F.R.C.P., K.H.P., professor of bacteriology as applied to hygiene in the University of London at the London School of Hygiene and Tropical Medicine, director of the Public Health Laboratory Service; A. A. MILES, M.A., F.R.C.P., professor of bacteriology in the University of London at University College Hospital medical school. London: Edward Arnold. Pp. 2054. 2 vols. 60*s*.

"Topley and Wilson" (now happily back to the two volumes of the first edition) has become the standard work of reference for most laboratory workers and all interested in medical bacteriology and its application to the public health. Topley's assumption of the secretaryship of the Agricultural Research Council in 1941 and his death in 1944 placed on his colleague the task of bringing the book up to date; fortunately in Professor Miles, whose keenly critical mind and lively phraseology can be appreciated in the new edition, he found a worthy successor to Topley. Recent literature has been thoroughly combed, abstracted and digested, and presented to the reader in an assimilable form. Indeed, many of the chapters are concise monographs, whether the subject be the tubercle bacillus or the disease tuberculosis, the genus Shigella or bacillary dysentery, the bacteriology of milk or of water. Special mention may be made of the reviews on bacterial metabolism and bacterial variation, the new chapter on chemotherapy, the extension in our knowledge of anaerobes (a fuller discussion on the place of antitoxin in the prophylaxis and treatment of gas gangrene would have been welcome), new data on the salmonella family with a brief mention of the evidence incriminating dried egg for the introduction of fresh American types of salmonella to this country, the critical—perhaps over-critical—analysis of B.C.G. vaccination, and the chapter on the bacteriology of air and the control of respiratory infections. The authors must be admired for their industry and unfailing accuracy, for their critical analyses and sound judgment, for their courage and skill in tackling such topics as bacterial metabolism, disinfection, and statistical methods, and for devoting what spare time they had during the war to this task. It is pleasant, too, to be able to congratulate the publishers on the form and materials of the book.

Textbook of Ophthalmology

(3rd ed.) SANFORD GIFFORD, M.D., F.A.C.S., professor of ophthalmology, Northwestern University, Chicago. London: W. B. Saunders. Pp. 457. 20*s*.

THE revision of this book, in which the essentials of ophthalmology are compressed into 400 pages, was completed by the author just before his death; had he lived, he would undoubtedly have added a chapter on penicillin in ophthalmology. In every other way the book is up to date. The many colour-photographs of external eye conditions are an advance on anything the artist's brush can produce, though for fundus illustrations colour-photography still leaves something to be desired. Professor Gifford was widely known for his sane views on debated subjects, and the chapter on the treatment and correction of myopia states outstandingly his common-sense opinions. Neither glasses nor exercises are curative of this condition, and it does no harm to say so in direct language. Because of its handy size, lucid text, and fine pictures, Professor Gifford's textbook must be considered one of the best students' manuals on the eye ever written.

Selected Papers from the Royal Cancer Hospital and the Chester Beatty Research Institute

Vol. III. London. Pp. 345. 16*s*.

THE third volume of selected papers contains its own warrant for collecting and reprinting these contributions to 16 different publications. Professor Kennaway's notes on the current literature of cancer research reveal how widely the papers are scattered and with how much irrelevant matter they are confused. Since his appeal was first made for more system both in publishing and abstracting cancer literature no move appears to have been made in this direction. Scattering is almost inevitable as the present volume shows. The subject has ramifications into several basic and applied sciences. The collection, classification, cataloguing, and abstraction of all that appears seems to be an obvious activity for the swollen funds available for cancer research. In the meantime we have here in pleasant and convenient form some papers that are especially valuable for medical readers. The aims and methods of measurement of radiation for medical purposes are lucidly set forth by Professor Mayneord. Articles on treatment of special sites and many papers on experimental research done in 1941–42 are included.

Everybody's Way to Health and Fitness

T. R. TOGNA. Published by author. Obtainable from W. H. Smith & Son. Pp. 48. 3*s*. 6*d*.

THE author gives a clear description and illustrates in detail the technique of the exercises which he uses to improve the circulation. The guiding principle is the provision of a sequence of rhythmical movements of the main skeletal muscles with minimum expenditure of nervous and muscular energy. Clinical experiments have shown that the oxygen requirement in water is only a half to a third of that for the same exercises performed in the air. The buoyancy of the water is used to lessen the work done against gravity when lifting the limbs and trunk. Mr. Togna has devised a system of muscular exercises which can be carried out in an ordinary bath with the body submerged in the water up to the neck. The temperature is 94°–96° F. The time taken is 15–30 min., preferably on getting up in the morning, or in the evening before dinner. This is a simple and convenient form of hydrotherapy which can be carried out at home by healthy people who are getting on in years and are doing sedentary work, and by people who are suffering from articular rheumatism, and need help in maintaining the mobility of their joints.

Polipos Cervicais e Afecções Polipoides do Colo do Útero

LICINIO H. DUTRA. Sao Paulo, Brasil: Livraria Tecnica. Pp. 64. Cr. 30,00.

ONLY an experienced linguist will get the most out of this short publication, but some excellent illustrations with photomicrographs demonstrate the histology of benign and malignant cervical polypi in great detail. The author's observations are followed by 36 illustrative cases and there is an English summary at the end of the book which is well worth reading.

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THE LANCET

LONDON: SATURDAY, JULY 6, 1946

Teaching in Child Health

RECENT reports on pædiatrics, and on medical education generally, urge the importance of developing teaching and research in regard to the healthy child. They recommend that the medical student should receive instruction at maternity units on the newborn baby, and at welfare centres and school clinics on the older child. But Prof. CHARLES MCNEIL,[1] of Edinburgh, thinks that this method of teaching child health is too fragmentary, and does not make full use of the opportunities. He argues that in the study of health the physician requires a continuity of observation in the same individual child from birth onwards, and that he should have this experience repeated in large numbers of children. Such a continuity must, he maintains, be presented to students rather than a series of piecemeal observations at different and unassociated units. He has already had experience of his plan in Edinburgh where a child health clinic was established in 1929 at the old maternity hospital and later transferred to new premises. A single central health clinic of this type, MCNEIL suggests, should be staffed by hospital pædiatricians and experienced child-welfare and school medical officers. A place on the staff should also be found for the family doctor, and the non-medical staff should consist of capable and experienced health visitors, midwives, nurses specially trained in breast-feeding and infant dietetics, a dietitian for the mothers, and an almoner. All the staff are expected to take part in teaching and research, and teaching includes of course the giving of authoritative guidance to mothers in the care of their own children. Diagrams in MCNEIL's article indicate that this central health clinic is to replace outlying child-welfare clinics and, presumably, school clinics.

This scheme, which has to some extent been accomplished in Edinburgh, should be carefully considered at this time when many new institutes of child health are coming into being. It has the advantage of centralisation and it avoids that travelling for students which deans always stoutly resist. It provides an easily accessible collection of records, and it must facilitate research. But it must mean more travelling for the mothers who attend at a central clinic, the essential work of the health visitor can scarcely be so good at a large central institute as at small district centres, and there are grave disadvantages and difficulties in holding school medical inspections away from the schools. Moreover, the large classes of students indicated in MCNEIL's article—amounting to 70 in a group—can scarcely gain more than a superficial acquaintance with the important detailed instruction of the mothers which is the essential part of child-welfare work. On the other hand, as a follow-up clinic for a maternity unit the Edinburgh centre presents many obvious advantages, and since it is at present limited to the first year of life some of the difficulties mentioned will not have been encountered.

Whether the Edinburgh plan is the best for other institutes of child health to copy is a more fundamental question. The teaching function of such an institute is to equip doctors and nurses with the knowledge and experience necessary for them to play a part in the prevention of disease and the maintenance of health in infancy and childhood. The more or less standard type of infant-welfare clinic has been evolved out of the experience of many years, and it is in these clinics—or in private consulting-rooms—that most of this intimate work will have to be done. Hence attendance at a welfare clinic, geographically as near the children's hospital or teaching centre as possible, will probably give the potential general practitioner the best idea of the everyday problems he will have to face later, and an apprenticeship of even a few visits, limited to two or three students at a time, is not only possible but is already achieved at some medical schools. The establishment of a model child-welfare clinic at an institute of child health, in conjunction with the appropriate local authority, has much to commend it. Those who saw the recent *March of Time* film, "Life with Baby," will recall the ingenious way in which the baby was examined and demonstrated in a glass-surrounded room, where by special lighting a large class outside the glass could see what was happening though they remained invisible to the baby. It should be possible to devise an examination-room of the welfare-clinic type where the audience is concealed behind glass while microphones on the doctor's desk relay the conversation and carry special items of instruction to the students through loud-speakers conveniently placed in the hidden gallery. School medical work presents more difficulty, especially if it is accepted as fundamental that interference with school work must be reduced to a minimum. Visits by small groups of students would enable theoretical instruction in the methods of examination to be illustrated by actual demonstrations of procedure. Something similar to the demonstration child-welfare room could be employed if a school were conveniently near the institute. Both these methods—the small class and the larger group—would keep the type of work used for teaching as near the actual as possible, and—of great importance—would enable the trainee to see the part played as a routine by the health visitor, school nurse, and the rest of the local-authority machinery. MCNEIL's suggestions for joint staffing and close association between hospital pædiatricians and child-welfare and school medical officers are obviously sound. Some will say that the continuity he rightly advocates can best be attained through such staffing rather than through over-centralisation of the clinical work. But it must be admitted that his views are founded on considerable experience, whereas in most other centres a start has scarcely been made. There is doubtless room for experiment and diversities of method. In the natural anxiety to secure the best facilities for teaching and research we must not ignore the interests of the mothers and children—what MCNEIL calls "the clinical material of health in pædiatrics."

1. *Arch. Dis. Childh.* 1945, **20**, 151.

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Atom Bomb Disease

THE two bombs dropped on Japan on Aug. 6 and 9 last year are estimated to have killed 120,000 people by blast, burning, or radioactive action.[1] The blast effects seem to have differed only in degree from those of high explosive, though they were sufficient to destroy over 4 square miles of wooden houses at Hiroshima, and $1^1/_2$ square miles of industrial and slum dwellings at Nagasaki. This widespread collapse of buildings caused most of the deaths. The radiant heat generated by the flash of the bombs was immensely greater than with other explosives. Travelling in straight lines, and therefore readily screened by intervening objects, including clothing, it produced severe burns within 1500 yards and less severe burns up to $2^1/_2$ miles, though relatively few people were burnt to death. In their radioactive effects atom bombs differ from any lethal weapon which has gone before. The effects of the blast and the heat were instantaneous, or at least were manifested within a few hours. The radioactive action, on the other hand, often left no immediate mark on its victims, but it nevertheless killed nearly everyone who survived blast and heat and was fully exposed within a radius of half a mile.

Of the various radioactive products of atomic fission, the radiations provisionally referred to as gamma rays (their exact nature is unknown) are the most lethal. These pass through the skin without affecting it, and the exposed person may have no symptoms for the first 24 hours. Thereafter he slowly develops the malady known to the Japanese as atom bomb disease, the main features of which closely resemble those of over-exposure to X rays. KELLER[2] describes 21 cases admitted to Osaka University Hospital about the end of August, 1945, 5 of whom died in the fourth week after the bombing. Though half of them had been within 500 yards of a bomb, very few recalled feeling any blast, only 6 remembered a noise, and only 9 had seen a flash; but the fact that all but 2 were indoors may have accounted for this. The first symptoms to appear are anorexia, nausea, and vomiting, developing between the second and fifth days. Bloody diarrhœa, with increasing anorexia and general malaise follow in the second week, when the hair on the scalp often begins to fall out.[3] Thereafter the clinical picture is dominated by signs of failure of blood formation, for the gamma rays attack the bone-marrow and interfere with the replacement of red cells, granular leucocytes, and platelets. In the third week hæmorrhages appear, often accompanied by fever (98·6°–104° F). Of KELLER's cases, 6 had bleeding gums, 3 subcutaneous ecchymoses, and others bleeding from the nose or throat; 4 of the 5 fatal cases had purpura. Other symptoms recorded include faintness, tightness in the chest, dizziness, difficulty in swallowing, and thirst; an increasing sense of weakness was almost invariable. One of the patients who died had a terminal jaundice, and another recovered after a transient icterus. Laboratory studies in KELLER's cases showed profound pathological changes in the blood. All the patients had a granulocytopenia, the total white-cell counts being below 1000 per c.mm. in 4 cases. The granulocytic series of cells were also strikingly depleted in 2 of the 5 patients whose marrow was examined. A hypochromic microcytic or normocytic anæmia was common though not constant, and thrombocyte-counts were low. The sedimentation-rates were exceedingly rapid—usually over 100 mm. in the first hour (Westergren)—and KELLER maintains that this finding is of great diagnostic and prognostic significance. Bleeding-times were prolonged, the average being 13 minutes (Duke), but clotting-times were within normal limits. A positive indirect van den Bergh reaction was observed in 6 out of 7 patients; fragility of the red cells was unaffected. The urine contained small amounts of albumin and sometimes tyrosin, and an increased quantity of urobilinogen. The blood showed a profound fall in total proteins, especially albumin. The effects of the gamma rays on reproduction will not be fully known for some years. Pregnant women who were within $1^1/_4$ miles of the centre of the explosions have either miscarried or given birth to premature infants who died very soon. Two months after the bombings miscarriages and abortions still amounted to more than a quarter of all deliveries. A high proportion of the men exposed to gamma rays had reduced sperm-counts.

Thus though the main effect of the penetrating radiations is on the hæmopoietic system and the liver, there is evidence of a more general disturbance which has yet to be fully elucidated. More data will no doubt be available when the medical section of the joint commission publishes its promised report and when we know the results of the animal experiments of "Operation Crossroads."

1. Effects of the Atomic Bomb at Hiroshima and Nagasaki. Report of the British Mission to Japan. H.M.S.O. Pp. 21. 1s.
2. Keller, P. D. *J. Amer. med. Ass.* 1946. **131**, 504.
3. Timmes, J. J. *Nav. med. Bull., Wash.* 1946, **46**, 219.

Nurses in the Team

DOCTORS look back with pleasure to their time of "clerking" and "dressing" because, callow and relatively useless though they were, their chiefs took a personal interest in them, used their services, encouraged them, and made them feel they were sharing in the work of the medical or surgical team to which they were attached. Nurses enjoy no comparable experience, unless it is in the preliminary training school under the direct tuition of the sister-tutor. For that short period they are treated as students, given time to do their work properly, and shown those finer points which matter to the sick—the well-cooked invalid dish, the inviting tray, the appetising helping. In the wards they are too often disillusioned; everything is hastily done, there is no time for niceties, and far from being made to feel part of the team newcomers are usually reproached with their slowness and insignificance. On p. 1 Mr. COHEN reminds us how much doctors are to blame for this neglect of the student nurse. He wants to see a change in our attitude, which would be, in fact, only a reversion to the courteous relations of FLORENCE NIGHTINGALE's day. He says, quite rightly, that the doctor in charge of a ward should know the names of his nurses, that new student nurses should be introduced to him, that nurses, like medical students, should have cases allotted to them, and that they should be present when the doctor is examining one of their patients. He points out that the dull lecture, given by an overworked member of the junior medical staff, is a waste of the student nurse's time and a misuse of the doctor's. Since it takes an experienced

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mind to select material to be taught to nurses, their medical and surgical lecturers ought to be members of the senior staff.

All this applies to the teaching of any nurse, whether she is working for State registration or the assistant nurse's certificate. In advocating a more thorough scientific training for nurses Mr. COHEN is presumably writing of the State-registered nurse, and we cordially endorse his opinion that she should have a much better grounding in pathology and anatomy, that she should attend laboratory demonstrations, and acquire that realistic knowledge of disease and treatment which will enable her to reassure patients not according to a glib formula but from a well-stocked mind.

But it would not, in our view, be wise to plunge nurses into this scientific type of training at the outset of their course. We have been recommending for some time that student nurses should spend their first two years of training in learning how to nurse—that is, how to look after a patient in his bed. For this reason we believe that all nurses might, in their first two years, take a basic course in nursing, largely practical but with just enough theory to give them a grasp of the principles underlying the practice they are taught. It is often said that the intelligent nurse will not be satisfied with this: that she will think it dull and stultifying, and will lose interest. There are two answers to this objection: first, to learn to do a practical thing well is often as great a test for the intellectual girl as for the simple one; and secondly, there is nothing to stop the student asking intelligent questions and getting intelligent answers. By all means let her read all round her subject if she wants to, and let the sister-tutor recommend appropriate books and discuss her difficulties with her, as a registrar will do with medical students. But at the bedside and in examinations let the emphasis be always on the practical care of patients. At the end of two years let her gain a qualification which gives her the title of "nurse"; and then, if she wishes, and is intellectually able, let her proceed to a senior course much stiffer on the theoretical side, and designed, as Mr. COHEN suggests, to give her real insight into disease processes. During this time she should have experience of different types of patient and different hospitals and should have the chance, in her final year, to specialise, so that when qualified she is fit to hold a senior post in her chosen work.

Some such compromise seems to us inevitable. Nurses who take a scientific course of this type must have had enough general education to profit by it; and since medicine and surgery yearly become more complex their standard of education will probably have to rise and go on rising. No doubt it would be ideal if every nursing candidate had first completed a secondary education; but we must face facts. In 1943, 40,591 girls over fourteen years of age left the grant-aided secondary schools, and though these do not compose the entire annual harvest of educated girl-power they do represent the main pool from which those nursing students who have had a secondary education are at present drawn. On Dec. 1, 1941, 33,581 students were employed in hospitals in England and Wales and 5645 more were wanted—a total of about 39,000. Assuming a 3-4 years' course, the annual demand for nursing students is therefore somewhere between 10,000 and 13,000, and this figure is far too high to be provided entirely from 40,000 girls who must also supply all the other occupations now clamouring for secondarily educated women. Hence many girls who take up nursing must be drawn from the less educated groups, which means that a large proportion of them could not attempt a course of the scientific type outlined by Mr. COHEN. Are, then, our most intelligent nurses to be held back to the mental pace of the slowest? Surely that is wasteful and short-sighted. They ought to be given the chance to go beyond the demands of the present S.R.N. examination and to develop into the well-informed colleagues of the medical staff whom they should properly be. This relationship, coupled with an equally high standard of nursing training, is what the Royal College of Nursing is seeking to achieve, and we are wholly with them; but we cannot share their view that it is possible to make this standard universal throughout the profession, or indeed that it would be well to do so. Such a course would not be within the scope of all the girls who are capable of becoming good nurses.

This does not imply that general nursing standards must be lowered: indeed, it is high time to raise them. But first we must know what nursing is; for in our attempts to make the nurse into an amateur medical student we have forced her to neglect her own subject. It has been suggested that the time has come for a new study of this question by an impartial body—a group of people who will not be hypnotised by tradition and custom but will bring a fresh eye to the task. Such a commission could doubtless learn much from case-histories written by nursing students. It could also usefully compare the experience of the patient nursed at home by a competent woman relation with that of the patient in hospital. The hospital patient will have his bed regularly made, but not according to *his* taste; he will have regular meals but they will not be served with that attention to detail and to his particular fads and fancies which he would get at home; the food may not appeal to him, and in any case he cannot count on getting a snack of whatever he fancies at the moment when he fancies it. Whether at home or in hospital he will get his medicines regularly, but at home he will probably be given something to take the taste away; he will also be allowed to have his sleep out in the mornings. In hospital nobody will have time to read aloud to him if he is bored, or to take down his letters if he feels too tired to write. If he has a headache nobody will indulge him by putting cold compresses on his head (in America they sensibly have ice-bags) and changing them every half-minute. Asked whether she did many of these things a hospital nurse would laugh and ask how much time she had to pander to patients' whims. But such trifles are of the stuff of nursing: they are the very things which the patient, in his childishness, feels all the better for.

Mr. COHEN wisely says the nurse must have time to gossip with the patient; she must even have time to sit down and talk to him, if he likes—time to consider him and learn his individual needs. She must be reoriented, so that she no longer thinks first of the work and how to get through it, or of her seniors and how to appease them, but of the patient and how to make him easier. Oddly enough, most girls come into hospital with that idea in mind.

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Annotations

SURGICAL TREATMENT OF PAIN

THE study of the anatomy and physiology of pain has made remarkable progress in the last ten years, especially in this country under such prominent workers as Sir Thomas Lewis and H. H. Woollard, and in America, where H. G. Wolff,[1] by ingenious but fairly simple methods, has lately unravelled the puzzling mechanism of headache in a variety of clinical conditions. No similar progress has been made in the art of relieving the symptom. The general and local anæsthetics dispel pain nonspecifically by abolishing all forms of sensation. Morphine is more specific, as are the new drugs, such as pethidine, which are intended to replace it; but they carry the grave risk of addiction. With recurrent or persistent pain, as in trigeminal neuralgia and tabetic crises, the physician now calls on the surgeon to block or cut the pathways of pain sensation at one or several levels, but often this surgical treatment does not produce the expected relief, perhaps because of the subjective nature of the symptom. Psychologists have always found difficulty in classifying it as either a sensation or an emotion. Like other sensations, it has a threshold and can be localised and referred to a stimulus; but it is interpreted much closer to the centre of personality than other sensations, such as touch and hearing, and it has much in common with emotions like fear and disgust. Workers in sensory physiology have often tried to differentiate the sensory component from the "unpleasantness" or "reaction to pain" of the emotional element, which they have left to the consideration of the psychologist.[2]

The futility of dualistic classifications of pain is illustrated by the observations of Professor Freeman and Dr. Watts, published in our last issue. After observing in psychotic and neurotic patients the relief of "mental pain" by prefrontal leucotomy (the Americans prefer to call it lobotomy), they have attacked the emotional component where its appreciation is linked with the centre of personality—the frontal lobes. Logically, this is correct; but some of their examples provide little support for the operation because of the patient's hopeless or terminal condition at the time of operation and because of the admixture of psychiatric symptoms. By some it may be regretted that now, when the psychological aspect of somatic symptoms in general medicine is being increasingly recognised and understood, the neurosurgeon has stepped forward in readiness to deal with one of these symptoms. It would, however, be wrong to think that all psychological symptoms can be treated by psychotherapy alone. For the patient with severe hypochondriasis and crippling pain which is uncontrolled by psychological or physical methods, prefrontal leucotomy deserves consideration.

RUTIN FOR INCREASED CAPILLARY FRAGILITY

BOTANICAL sources for drugs influencing hæmorrhage seem of peculiar interest to American pharmacologists; after spoiled sweet clover as a source of dicoumarin, buckwheat as a source of rutin is proposed. Rutin has been used by Shanno [3] for the treatment of hæmorrhage due to increased capillary fragility. It is a crystalline glucoside that was isolated as long ago as 1860 by Schunck at Manchester, and it can be obtained in a reasonably pure state by recrystallisation. The rationale of its use for influencing capillary fragility is briefly as follows: Szent-Györgi separated from impure natural vitamin C a substance that, experimentally, corrected increased capillary fragility in guineapigs; this substance he called "citrin," or vitamin P; later, citrin was shown to be an impure mixture of two flavone glucosides, hesperidin and eriodictyol. (Neither of these glucosides, however, gave really satisfactory results; hesperidin has been the more extensively tested, but the results hardly aroused any enthusiasm.) Rutin is a flavone derivative with a chemical structure similar to hesperidin, and the possibility that this was the active substance in the citrin mixture led to these trials.

For testing, Shanno used Göthlin's technique of estimating capillary fragility: this consists in counting the petechiæ produced in a circle 6 cm. in diameter on the antecubital fossa below a blood-pressure cuff inflated to 35 mm. Hg for 15 min., and repeated, an hour later, at 50 mm. Hg. The dose of rutin was 60–120 mg. daily by mouth. A group of 24 hypertensive patients was tested. Thirteen of them, with hypertension and increased capillary fragility, showed a return to normal Göthlin fragility on rutin treatment. Of 11 hypertensive patients receiving thiocyanate treatment, 7 had normal fragility and maintained it when given rutin together with thiocyanate; 3 had developed increased fragility during treatment with thiocyanate, and rutin restored it to normal; 1, who had been given rutin for increased fragility and become normal, was subsequently given thiocyanate and rutin without relapse. Other conditions treated were: 2 cases of hæmorrhage from the respiratory tract for which no local lesion could be found, associated with increased capillary fragility, both of which cleared up with rutin treatment for some weeks; a case of thrombocytopenic purpura, unaffected by rutin; 3 cases of hæmorrhages due to drugs (sulphadiazine, gold, and aspirin), whose bleeding ceased with rutin treatment coupled with withdrawal of the offending drugs—a finding of doubtful value. Couch, Naghski, and Krewson [4] have investigated various plant sources of rutin and find that buckwheat, leaves and blossom, gives the best yield; they report the conditions of cropping and preserving for obtaining the best results.

Hæmorrhagic diseases associated with increased capillary fragility, as opposed to those due primarily to disturbance of platelet formation or the blood-coagulation mechanism, still present an intractable therapeutic problem; we hope that more detailed reports of the value of rutin will support these preliminary investigations.

YEAR'S WORK AT THE LISTER INSTITUTE

THE report [5] of the Lister Institute for 1945–46 lists a variety of investigations on pathological, biochemical, biophysical, and nutritional subjects. Work has continued on the alpha-toxin (lecithinase) of *Clostridium welchii* and on the pathogenesis of gas-gangrene. It has been shown that lecithin occurs in the contractile element of muscle, and this is of interest because of the early loss of contractility in muscle affected by gas-gangrene. Bacterial hyaluronidase, it appears, may consist of several enzymes, and this may have important effects on the ability of micro-organisms to attack and invade the animal body. Study continues on the nuclear structures of bacteria, on pyrogenic substances in materials used for transfusion, and on the immunology of trichomonas infections in cattle. On the biochemical side there has been progress in the study of human specific blood-group substances and the specific group O substance has been isolated. The structural chemistry of "gramicidin S" has been investigated and a tentative formula suggested. A fresh approach is planned in seeking the nature of the somatic antigens of gram-negative bacteria, and the search for better antitoxins goes on. In the biophysical section an attempt is being made to obtain a standard fibrinogen preparation for the assay of thrombin, and among the practical problems solved is the supply of fibrinogen, fibrin, and thrombin for the clinician. There

1. Wolff, H. G. *Arch. Neurol. Psychiat.* 1943, **50**, 224.
2. Guttman, E., Mayer-Gross, W. *Lancet*, 1943, i, 225.
3. Shanno, R. L. *Amer. J. med. Sci.* 1946, **211**, 539.
4. Couch, J. F., Naghski, J., Krewson, C. F. *Science*, 1946, **103**, 197.
5. Report of the governing body, Lister Institute of Preventive Medicine, Chelsea Bridge Road, London, S.W.1.

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is much to learn about the nutritive value of different food proteins, and it is encouraging to find that the proportion of the ingested nitrogen which becomes finally incorporated in the tissues of growing animals is increased from 23 to 27% as the degree of extraction of flour is raised from 70 to 100%. The nutritive value of protein hydrolysates and of milk substitutes for use as infant foods has also received attention, as have biological estimations of vitamins. These are a few of the useful findings published in some thirty papers during the year, and there is good reason for the feeling of the chairman of the governing body that the institute is well embarked on a career of new and expanding service to science and to the community.

IMMUNISATION WITH THE VOLE BACILLUS

THE vole bacillus, or the murine type of tubercle bacillus, occurs as a natural pathogen in some of the wild mice of Britain. It was first described by Wells [1] in 1937, when he was collaborating with Elton in a study of the diseases of voles in Great Britain. Tuberculosis in voles is a widespread disease, and is the only known instance of tuberculosis affecting wild animals in their natural habitat. The type of tubercle bacillus causing tuberculosis in voles is not pathogenic to the usual laboratory animals, the infection caused by the inoculation of the bacillus being transitory. This led Wells and Brooke [2] to investigate the question whether inoculation of guineapigs with the vole bacillus increased their resistance to subsequent infection with the human or bovine types of tubercle bacillus. Their experiments were interrupted at the outbreak of war and the animals had to be killed. At that stage of the experiment they concluded that vaccination of guineapigs with the vole bacillus gives a degree of protection against subsequent infection with virulent mammalian tubercle bacilli which is apparently far greater than has been recorded by other means.

The immunisation experiments in guineapigs have been repeated by several workers (Griffith and Dalling [3] in this country, Irwin and O'Connell [4] in Canada, Wahlgren et al.[5] in Sweden, Corper and Cohn [6] in America, and Birkhaug [7] in Norway). The methods employed differ widely, but all agree that a pronounced increase of resistance to infection with virulent tubercle bacilli follows inoculation with the vole bacillus. It is quite clear, however, that in the guineapig resistance does not amount to immunity. The effect of inoculation is a delay, often very considerable, in the establishment of generalised disease after infection with virulent tubercle bacilli, but death from tuberculosis eventually follows. The painstaking work of Birkhaug makes this abundantly clear. The average survival time of twelve unvaccinated guineapigs after infection with virulent tubercle bacilli was 192 days, whereas that of twelve animals vaccinated with the vole bacillus before infection was 403 days.

It is still uncertain how the resistance conferred on guineapigs by vaccination with the vole bacillus compares with that produced by B.C.G. The results of Wells and Brooke, of Irwin and O'Connell, and of Wahlgren and colleagues, suggest that in the earlier stages of artificial infection vaccination with the vole bacillus produces the greater resistance. Corper and Cohn, and Birkhaug, on the other hand, have found that the resistance conferred is about equal, if the animals are allowed to survive. It is very doubtful if immunity experiments in tuberculosis in the guineapig can be translated into terms of human immunity. The guineapig is absolutely susceptible to infection with mammalian tubercle bacilli and shows no natural resistance to progressive infection. In man, natural resistance, or resistance acquired as a result of previous infection, can completely overcome a tuberculous infection. In other words, infection in the guineapig is inevitably fatal; whereas the result in man is determined by the balance between natural or acquired resistance and the infective process. An increase in resistance in man may lead to healing of the infection; an increase in resistance in the guineapig merely delays its death.

There are several questions still to be answered before the vole bacillus can be considered for human vaccination. Is it incapable of producing progressive disease in man? Will it convert a negative reactor to tuberculin into a positive reactor, and how long does this sensitivity last? Can human vaccination with the vole bacillus be done without causing severe local or general reaction? Does human vaccination confer increased resistance to tuberculosis? It is hoped that the first three questions may soon be answered. The last question is vital, but the answer may be delayed for some time. Evidence of this nature is notoriously difficult to collect, and careful planning will be needed if the answer is not to be indefinitely postponed.

1. Wells, A. Q. *Lancet*, 1937, i, 1221.
2. Wells, A. Q., Brooke, W. S. *Brit. J. exp. Path.* 1940, **21**, 104.
3. Griffith, A. S., Dalling, T. *J. Hyg., Camb.* 1940, **40**, 673.
4. Irwin, D., O'Connell, D. C. *Canad. med. Ass. J.* 1943, **48**, 486.
5. Wahlgren, F., Olin, G., Widström, G. *Nord. Med.* 1944, **22**, 943.
6. Corper, H. J., Cohn, M. L. *Amer. J. clin. Path.* 1943, **13**, 18.
7. Birkhaug, K. *Amer. Rev. Tuberc.* 1946, **53**, 411.

BICENTENARY OF THE LONDON LOCK HOSPITAL

AT the time the London Lock Hospital was founded 200 years ago, there were two ancient lock hospitals still functioning in London—all that remained of the seven lazar-houses granted to St. Bartholomew's Hospital by Henry VIII at the time of the dissolution of the monasteries.

Locks, lazars, or outhouses were a recognised feature of the medieval hospital system of England. They were built by the pious especially for the treatment of lepers, because these outcasts were not admitted to the buildings attached to the monasteries reserved for the sick, the halt, and the blind. Instead, for them, wandering along the highways of medieval England with their begging-bowls and rattles, special lazar-houses were erected close to the monastery gates; and there at sundown the real lepers as well as the men covered with the foul ulcers of untreated scabies, the victims of lupus and rodent ulcer—all loosely diagnosed as lepers—were segregated. Outside the lazars, baskets of rags, lint, or wool were placed so that the lepers might wipe their sores before admission. The baskets were *les loques* (French for rags) and the lazars in Norman England came to be known as *les locks*. But when leprosy declined in Europe, and especially in England, towards the end of the 15th century, the lazar-houses became almost empty; and it was then as it happened that syphilis burst upon an unprepared world. Naturally the lazars were hastily turned over to the treatment of venereal disease; and the few remaining lepers were quickly swamped by the victims of syphilis. It is believed that it was in this way the word "lock" became associated with venereal disease.

Certainly there is no doubt that the hospitals for lepers became hospitals for venereal disease. Up to 1813, for instance, there was a plaque on a tumbledown building in Southwark labelled "The Chapel of the hospital for lepers, Le Lock, dedicated to St. Mary and St. Leonard. Founded prior to the 14th year of Edward II." This belonged to the old lock hospital for men in Kent Street, vacated by St. Bartholomew's in 1760 after 2½ centuries of use as a venereal hospital. It was returning from this hospital that Percivall Pott is said to have broken his leg, for the surgeons of St. Bartholomew's were surgeons to Le Lock from the time of Thomas Vicary until its extinction. It was possibly the knowledge that the lock hospital in Kent Street and the "spital" for women in Kingsland were about to be done away with, coupled with the great increase in venereal diseases in outer London, that induced William Bromfeild (1713–92), surgeon to St.

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George's Hospital and the Princess of Wales, to decide that he ought to start a hospital for the treatment of venereal diseases in the West End. His court appointment enabled him to acquire royal patronage, and to collect around him an influential committee of noblemen and gentlemen with whose aid he started the London Lock Hospital in what afterwards came to be called Chapel Street, halfway down Grosvenor Place from St. George's Hospital itself.

The first meeting of the committee was held on July 4, 1746, and a house belonging to a Mr. Cooper was bought with the remains of a 99 years' lease from Sir Robert Grosvenor for £350 and a ground rent of £10 annually. The site was then an open land infested by footpads at night and the scene of occasional duels by day. And there the hospital remained until its lease expired in 1840. The Grosvenor estate by then had greatly changed its character. It had been built over and become fashionable. It was thought, therefore, that a hospital of this nature was undesirable in the area, and the governors were given notice to vacate by the then Marquis of Westminster. This made the board decide to obtain a freehold for the hospital in the future, and after some delay they found a site on Westbourne Green which they bought from the executors of Mrs. Siddons, the famous actress, who had a cottage there. The hospital accordingly reopened in Harrow Road in 1842 and its main activities were carried on there. Outpatients from other parts of London, however, found Harrow Road difficult to get at, so the site of St. Paul's Mission College in Dean Street, Soho, was bought and adapted for hospital use, the first outpatients being seen in July, 1862. Just before the 1914–18 war this antiquated building was pulled down and the present hospital was built on the site. Elaborate extensions were made in 1926 to bring the building and equipment up to date, and when in 1940 the Harrow Road Hospital was commandeered by the War Office, activities were concentrated in Dean Street. Considerable damage was done to the buildings during the blitz, but the work went on without interruption throughout the war. The hospital has now weathered its first 200 years, and its work seems to be steadily increasing.

AMERICANS FROM JAPANESE PRISONS

PRISONERS-OF-WAR have shown fewer signs of mental stress than we had been led to expect. Indeed, it seems likely that most of them meet their abnormal experience in ways which, while they may deviate a little from those of the untried mind, are yet the normal response to that particular situation. But as with other stresses, it takes a sound mind—and, in the case of prisoners of the Japanese, a sound body—to survive unharmed. Three years in Japanese prison camps seems to have had little effect on the minds of some 4000 American soldiers now repatriated.[1] When they landed in the United States these men were received by teams of medical specialists from the office of the Surgeon-General, and a report on their neuropsychiatric condition has just been made by Lieut.-Colonel N. Q. Brill. In spite of starvation rations and frequent beatings during their imprisonment these men had survived, though many of their comrades, in about the same physical condition when captured, had succumbed. The psychiatrists found nothing to explain this difference in endurance except a "will to live" in the survivors.

They lived only for the day and at once ate what came their way. Men who began to hoard their rice allowance for several meals in order to enjoy the sensation of one good meal were described as "rice happy." Such hoarding was usually a sign of crumbling fortitude, and the man who showed it was likely to die before long. If they became ill those who were less determined to live would often stop eating entirely and die in a few days. The common factor among the survivors, who were otherwise widely different in character, was that they never gave up their struggle to live. "They ate anything available, including cats, dogs, silkworms, and other things repulsive to normal human beings," Colonel Brill reports. "When struck with dysentery and malaria they would nevertheless attempt to carry on. This strength and courage had no connexion with social background or education."

The men have no doubts about their ability to resume normal life: after three years in the camps, they felt they would be equal to any situation likely to arise at home.

1. News Notes. Office of Surgeon-General, Washington, May 15, 1946.

TACTICAL APPROACH TO LEPROSY

Dr. T. F. Davey last week described precisely how leprosy is tackled in a province of Nigeria (Owerri) where there are some 70,000 lepers. The general plan is to attack the disease in each clan or locality, developing a local campaign as self-contained as possible. The first step is to appoint a local organiser, the "leprosy inspector," whose initial duties include preparation of a detailed map and inquiry into local beliefs about leprosy. Next comes propaganda: public opinion has to be enlightened through schools, meetings of chiefs, visits to villages, posters, and booklets. With the ground thus prepared, the third step is to open a clinic, offering local patients free treatment of leprosy, of its complications, and of associated ailments, free hospital care being provided at a central settlement for those who need it. This clinic is staffed by one or more resident nurses (themselves patients), working with the leprosy inspector, and is visited by specialist staff from the central settlement: the site must be given by the people themselves as a sign of their coöperation.

"Although," said Dr. Davey, "the clinic quickly becomes the centre of the lives of local patients, who render much voluntary service in its maintenance, its value from the public-health standpoint is limited, as leprosy treatment is only partially successful with the more severe types of leprosy, and treatment alone will not stamp out the disease." The fourth stage in the campaign, therefore, is the segregation of infectious patients—if possible in a model village or hamlet which should be an object lesson in sanitation and organisation. "This is the most vital and by far the most difficult step in the programme. It is no small thing for a man to leave the village of his fathers and move to a new village, residence at which stamps him as a sufferer from leprosy. The fact that between 3000 and 4000 have done so in Owerri Province is evidence of their readiness to coöperate." The fifth stage, which can be undertaken only by the general wish of the clan, by invitation, village by village, is to make a leprosy survey to discover hidden cases and assess the situation. Though a survey team is available for areas of special difficulty or interest, the usual custom is for the leprosy inspector to go from house to house, taking a census as he goes—a process which may take some two years, so that it is then time to start again. If each case is treated with sympathy, and family difficulties are smoothed out, it is generally possible to induce the vast majority of sufferers—maybe all—to isolate themselves, and when this has been achieved the decisive stage in leprosy control has been passed. The sixth or final stage of the campaign is its maintenance, with special emphasis on the observation of child contacts.

Dr. Davey was speaking at the annual meeting in London of BELRA, the British Empire Leprosy Relief Association, which has made this work possible not only by advice and encouragement but by providing staff, including a doctor, a nursing sister, and a succession of Toc H volunteers who act as accountants, dispensary workers, organisers, and supervisors of clinics and model

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villages. During the last two years the resources of the Colonial Development Fund have been thrown into the fight: staff have been absorbed into the Nigeria Leprosy Service and in Owerri Province it is hoped to extend the six-point programme over the whole area. But though the government's assumption of full responsibility is profoundly satisfactory, mere compulsion would be worse than useless; and in leprosy, Dr. Davey believes, a government needs the help of voluntary organisations in the work of personal contacts and social welfare. "Leprosy is a key disease. The attack on it opens the door to a higher standard of health on the part of the entire community, and in its various aspects governments, missions, and BELRA have all a vital part to play." He is convinced that "working together we may see in our lifetime the conquest of humanity's most ancient disease."

INTRACAPSULAR EXTRACTION OF CATARACT

THE lens had been expressed from the eye complete in its capsule before that time, but intracapsular extraction of cataract was first systematically employed by Colonel Henry Smith [1] in India at the beginning of this century. The extracapsular operation, in which the anterior lens capsule is cut and the nucleus expressed, leaving the posterior capsule intact, had been the undisputed method since Daviel [2] first described it in 1748, and indeed is still the operation most often performed. Smith had observed that when the lens inadvertently came out of the eye in its capsule, convalescence was short and the visual result good, and in 1903 he began to use this as a routine procedure. His technique was to rupture the lens zonule by pressure from without with a squint hook, and then to express the lens from the eye by pressure from below and gentle counter-pressure above the section. This, the Smith-Indian method of tumbling the cataract, is still used in some countries, but here it has been superseded by the forceps operation, in which the lens capsule is picked up in special forceps without rupturing it, the zonule broken by gently rocking the lens from side to side, and the lens in its capsule withdrawn from the eye with the help of external pressure from below.

At first Smith found little support in England. The response in Scotland was more enthusiastic; and he was encouraged by Herman Knapp, of New York, who wrote in 1905, after Smith had described his method in the American *Archives of Ophthalmology*, "If you can establish a safe method of intracapsular extraction of cataract, you will be a greater benefactor to mankind than Daviel. If I were not over 70 years of age and in infirm health, I would go round the world to see how to do it." On the other hand, the president of the ophthalmology section of the British Medical Association, at its meeting in Swansea in 1903, said, after Smith had spoken, "I believe there is a deep-rooted opposition to this procedure in the meeting." Smith himself was not to be deterred by such a cold douche, and by 1910 he had published his first book, in which he described his experience of some 25,000 patients treated by his method. He foresaw then that one day his procedure would be used throughout the world, and it now seems as though his words may come true.

For extracapsular extraction it may be said that it is easier and less likely to cause prolapse of the vitreous humour, since the posterior lens capsule usually forms an effective barrier. On the other hand, it has the disadvantage that some lens cortex remains in the anterior chamber to be absorbed, and restoration of good vision may thus be long delayed; moreover, the lens protein is liable to irritate the eye and set up an iritis which prolongs convalescence. Finally, needling is often necessary after the operation. None of these drawbacks are encountered after intracapsular extraction, with which the result is more immediate and convalescence easier; this method has the added advantage that it is unnecessary to wait for the cataract to ripen before operating. But it is not practicable with all cataracts. Below the age of forty-five, the lens zonule is too strong to allow of its being ruptured without damaging other structures in the eye, and in patients with an intumescent cataract it is not easy to pick up the lens capsule without rupturing it.

1. Treatment of Cataract and some other Common Ocular Affections. London. 1928.
2. *Mém. Acad. Chir., Paris*, 1748, 2, 1.

ROYAL SOCIETY OF MEDICINE

Sir Gordon Gordon-Taylor, president of the Royal Society of Medicine, is at present occupying the chair of surgery at Harvard for a complimentary period. While in America he is conferring the society's honorary fellowship on two of the five recent recipients—Colonel L. C. Montgomery, R.C.A.M.C., and Colonel W. S. Middleton, U.S.A.M.C. The others are Sir Alan Newton, of Melbourne, Group-Captain Antoni Fiumel, late D.G.M.S. of the Polish Forces, and Colonel C. F. Koch, late D.G.M.S. Netherlands Forces; and the two last, both of whom escaped to England during the German occupation of their countries and made many friends here, were admitted by Sir Henry Tidy, past-president, at the annual meeting last Tuesday.

Sir Henry was able to report an annual rise of almost 10% in the society's membership during recent years, the total now standing at 8129. He spoke especially of the work now being undertaken, with the aid of a grant of £61,725 from the Rockefeller Foundation, for the restoration of medical libraries in liberated countries; of the efforts being made to bring visitors from abroad into touch with their colleagues here; and of various ways in which the society is collaborating with other bodies. Mr. J. B. Hunter, as hon. treasurer, forecast considerably higher expenditure in the near future on the library.

Sir Maurice Cassidy, consulting physician to St. Thomas's Hospital, was elected president for 1946–47. After five years' service Dr. Charles Harris is retiring from the post of hon. secretary, and the new hon. secretaries will be Mr. R. H. O. B. Robinson, F.R.C.S., and Mr. W. A. Pool, M.R.C.V.S.

AMALGAMATION OF MANCHESTER MEDICAL SOCIETIES?

THERE have been and still are many medical societies in Manchester covering most branches of the profession, and an attempt is now being made to bring these together into one inclusive Society of Medicine of which existing societies may form sections and for which new sections could be formed as required. The scheme follows closely that of the Royal Society of Medicine in London, which is now giving friendly and valuable advice on the subject. The extensive area of Manchester lying between Oxford Road and Upper Brook Street—an area in which several big hospitals, including the Royal Infirmary, already lie—has been marked out in the town-planning scheme as a medical centre. Here ultimately hospitals, nursing-homes, and the medical school of the university may congregate. The supporters of the amalgamation scheme wish to have here a worthy building where meetings of all sections of the proposed society may be held, where post-graduate and other lectures may be given, and where the Medical Library may be housed. This library, claimed to be the biggest medical library in England outside London, was formerly the property of the Manchester medical society, but was passed over to the university some fifteen years ago with certain rights of user retained. If matters can be arranged between the university, the local branch of the British Medical Association, and the various societies already existing, an institution worthy of a great city and a large medical school should be possible.

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Special Articles

MEDICINE AND INDUSTRIAL SAFETY

Prof. HERMANN LEVY

INDUSTRIAL safety covers the application of devices to prevent personal injury from accident or disease. Safety measures in mines, fencing of machines, dust extractors and exhaust fans, respirators, better light, caps for women, protective clothing, skin protection, all protect workers against risks due to external circumstances—what Swinburne calls "the malice of things." In that respect they are technical, and legislators and administrators have been apt to concentrate mainly on the technical and mechanical factors involved. Nevertheless the Factory Department, which deals with the carrying out of the constantly increasing number of statutory safety regulations, and the Royal Society for the Prevention of Accidents have long recognised that the value of safety devices is greatly reduced if managers and employees do not exercise constant personal vigilance and care in their application.

The fact that in spite of all technical achievements in industrial safety the wastage of man-power caused by industrial injury has remained appallingly high—a fact proved by a statistical investigation made by the International Labour Office in 1938—shows that the purely technical approach to this question is not sufficient. Industrialists are beginning to recognise that this is so. Not long ago a Canadian industrialist declared: "The bulk of our present-day machines come to us already guarded in every possible way, but in spite of these guards accidents continue to occur with a sickening regularity."

THE HUMAN ELEMENT

Experiences such as these have prompted the Canadian accident-prevention associations, set up under the Workmen's Compensation Act of Ontario, to inquire how far the "human element" should be considered responsible for the frequency of injury. This attitude should not be interpreted as putting the blame on the worker instead of blaming "the malice of things"; it simply shows the increasing recognition of the personal factors involved in every single industrial accident or injury.

A recent investigation made by the Dominion Engineering Co. of Montreal revealed that only 5% of the accidents investigated had been due to lack of supervision, 15% being attributed to faulty housekeeping and 80% to the human element. Of these 80% the cause was given as mental aberration, in other words forgetfulness and carelessness, in 75%. "But," a member of that company asked, "why do people forget? Why are people careless? If we had the answer to that, we would have the answer to the prevention of industrial accidents as well as the reason for a lot of troubles and miseries of this world."

To ask how and to what extent the human element is involved in the problems of industrial safety immediately leads us away from the merely mechanical side of the problem and discloses the important rôle of medicine in this matter.

This side of industrial safety has of course not been overlooked entirely. An important start was made towards the end of the 1914–18 war, when the Medical Research Council set up the Industrial Fatigue (now Industrial Health) Research Board. Since then much important work has been done bearing immediately on the prevention of personal industrial injury; it related to fatigue, speed, eyestrain, monotony of work, dexterity, psychological effects of noise, warmth, lighting, and personal qualities such as accident-proneness and proficiency.

Medicine also became concerned with the immediately practical issues of industrial safety when regulations requiring medical examination of entrants into industry were made. It is obvious that in this field medicine can render an enormous service to industry. If these examinations were to be made with special regard to accident-proneness, a good many injuries could be prevented; but hitherto they have been limited to the statutory examination of new employees under 16 years of age and, under the Workmen's Compensation Act, of workers wishing to be employed in special processes, mostly in the sandstone, pottery, and asbestos industries.

There is as yet no general or comprehensive scheme to link medicine with industrial safety, and it is doubtful whether the suggestion made by the Factory Department of the Ministry of Labour, that "it may well be to the advantage" of both the employee and the employer that "in certain cases" the employee should be medically examined and advised about his suitability for the particular job proposed, will be followed at all extensively. Agreements have been made in certain industries—e.g., the coke-oven industry—between employers and employees which provide for medical examination of workers exposed to tar and its products. This is a hopeful beginning, but little has yet been heard of applying medical science and practice to deal with that aspect of industrial safety which concerns the human element.

Science, though highly advanced in respect of technical devices to prevent accidents, is still in its infancy as regards the human element involved in industrial safety. It is here that, in the future, medicine must first be consulted. Research undertaken by the Industrial Health Research Board into accident-proneness revealed that, if a large number of people are exposed to the same risks, 75% of all accidents occurring among them happen to a small minority of the group, possibly consisting of as few as 10%—in plain language, to the "all thumbs" people. But another branch of medicine assures employers that fully rehabilitated partially disabled persons can, after training, do the same jobs as those not disabled, and may even meet with fewer accidents. American statistics have proved this in various large industrial establishments. Here, apparently, we have two views which at first can hardly be reconciled. On the one hand, the employer is told that he does not run any risks in employing workers who have already met with an accident; on the other, he is assured that it is more or less always the same people who meet with accidents, and that multiple accidents are the rule. The answer to this riddle is that some workers, owing to accident-proneness, either physical or psychological, are unfit for certain jobs but, after rehabilitation, can safely be employed in other jobs.

JOB ANALYSIS

The Industrial Health Research Board suggests the removal of accident-prone workers "to safer places" and expects that this would have "a big effect on accident reduction." But this selection of occupation requires knowledge of what such persons can do without risk, a knowledge not only of their physical and functional abilities to work but also of the kind of work best suited to them. It is here that job analysis comes into the picture; but to choose the right job for a worker, or to pick the right worker for a specific job, is by no means a matter solely for the technical and industrial management to decide. Job rating has been defined as the analysis of a job to determine the degree of skill, effort, and responsibility, and the working conditions in relation to other jobs in the same plant—i.e., the human requirements of a particular job. When we know this we may be able to choose the right worker for the job, but this task presupposes the collaboration of medical judgment. Job rating must coincide with man rating.

Job analysis should have developed long ago apart from the special aim of placing the disabled; but it was not until the progress in physical and functional

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rehabilitation impressed physicians and surgeons with the necessity of placing the disabled person in a job with as much guarantee for his future safety as possible that job analysis found its way into sociomedical considerations. It is now one of the main aims of the newly formed British Council for Rehabilitation. There can be no doubt that job analysis properly carried out can reduce accidents and thus promote industrial safety, besides improving the workers' efficiency.

HOME SURROUNDINGS OF WORKERS

It is with the effect of job analysis on industrial safety, and through this on industrial health, that medicine is chiefly concerned; and the scope of medicine will be enlarged when the problem of industrial safety is not narrowly confined to conditions inside the factory but also considered in relation to the total sociomedical aspects of the workers' life. The worker least liable to industrial injury, so far as the human element is involved, is the worker living in healthy surroundings—a fact which implies that accident prevention is intimately connected with social medicine.

Psychosomatic Illnesses.—Some of the psychosomatic illnesses, such as peptic ulcer and gastro-intestinal disorders, asthma, hay-fever, high blood-pressure, arthritis, and the common cold, as well as various skin conditions, such as warts and allergic reactions, have never been considered in connexion with the patients' work. Nevertheless it has been pointed out at a conference of industrial accident-prevention associations in Canada that a person suffering from them cannot be an effective workman and "the mere fact that he is resentful or anxious, that his mind is not at rest, that he is nervous, reduces his efficiency and makes him allergic to accidents." The moral is that medicine should tackle industrial safety in the workers' homes and include accident prevention as a part of general health.

Worries.—The same may be said about "worries," which may conduce to the frequency of accidents. Such worries may be intimately connected with accident-proneness, and perhaps nobody is better fitted than the doctor, especially the family doctor, to dispel some of them. There are certainly many emotional tensions of the workers which are unconnected with medical problems; others, however, are directly due to psychophysical conditions which the doctor may remove or reduce; and he may try to alleviate the effect on health which non-medical worries may produce, and thereby prevent the deterioration of the worker's professional efficiency and his possible accident-proneness.

Rheumatism.—Some big establishments in the mining industries are giving special attention to the incidence of rheumatism and have engaged specialists to reduce its incidence. The Empire Rheumatism Council has arranged with collieries to establish treatment centres for rheumatism at the pit-head baths. In a study of arthritis in women, Fortescue Fox pointed out that disability from arthritis was minimal where *home* and *working* conditions were good; in a certain investigation only a small proportion of arthritics visited were living under good conditions at the outset of the illness, and good results were often produced by improvement of the conditions. This is yet another example showing that industrial safety cannot be divorced from home conditions.

Medical Guidance in Choice of a Job.—We have as yet few data on which to base the claim that the progress of industrial safety is closely linked with the medical side of job analysis; but the report of the Department of Health for Scotland for 1943 has shown that many men invalided out of the Army adopt work "full of accident risk" when left to their own choice—an epileptic, for instance, becoming a stoker, or a man with severe splenic anæmia driving a bus. The report emphasises the necessity of giving due care to the "social, medical, and occupational aspects" of the employment of partially disabled or handicapped persons. How many people who get seasonal hay-fever know that, in the words of E. M. Fraenkel, "the monovalent allergy may become polyvalent," that they may become sensitive to moulds and dust, and that their jobs should be adjusted to this condition?

In an important study of *Job Placement of the Physically Handicapped*, which has just been published, an American author, Clark D. Bridges, observes that "workers' ill health is responsible for ten or fifteen times as many lost days as accidents, but, until recently, has been one of the least appreciated and consequently one of the most neglected considerations in employee placement." To this criticism we may add that if more attention were given to the preservation of the worker's health with a view to accident-proneness there would be fewer accidents in industry.

THE DOCTORS

If we are to remove industrial safety from the narrow corner of technical accident prevention to the broad platform of general health, doctors will have to accept the main implications and obligations of this change.

Surgical Specialists.—We already owe much to specialists, particularly those rehabilitation surgeons who, like Hugh E. Griffiths, through the British Council for Rehabilitation, are now promoting job analysis on a wide scale. But surely job analysis must not be confined to people disabled by fractures. Persons afflicted with industrial disease or with neurotic or traumatic mental disorders require just as much careful occupational placement to prevent them from being a potential risk to themselves, their fellow-workers, and industry as a whole.

Works doctors also should be closely interested in industrial safety. They are in the best position to estimate the medical requirements of industrial safety in specific industries. Their work would be more successful as regards the "human element" in accidents if they could claim to be as much the workers' as the firms' servants. This could be achieved by giving workers' representatives a say in their appointment. Their number, now some 250 whole-time and over 700 part-time doctors, should be much increased.

General practitioners should play their part in promoting industrial safety; but they should be better paid, less harassed, and able to give more time than at present to such special services as the treatment of persons with a view to their safest employment. General practitioners specially interested in sociomedical and occupational problems should be encouraged, under any scheme of national health service, to take up this work and should be given facilities for research work. In this respect Britain has hitherto lagged far behind some other countries, which have intimately linked their industrial accident insurance administration with accident prevention and medical treatment. In some other countries workmen's compensation boards or statutory associations of employers and employees concerned with the treatment, rehabilitation, and re-employment of disabled persons collaborate closely with the medical profession.

It is regrettable that the new national insurance schemes have no place for accident prevention and medical treatment, both of which are left to agencies other than those of social insurance. Other countries have in their legislation rightly recognised that industrial safety and medical treatment of the injured should be linked with the duties of those most closely concerned, and the result has been that the requirements of both, as they vary from industry to industry and occupation to occupation, have been met by expert technical and medical specialisation. Under the new social insurance (Industrial Injuries) scheme not only is this link missing, but (worse still) employers lose the incentive to further industrial safety

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which might have been provided by the system of "merit rating." This omission may discourage employers from engaging more works doctors or from undertaking measures of industrial health and safety beyond the bare legal requirements, since expenditure incurred on these objects will not be rewarded by reduction of insurance rates. Hence it becomes more and more important for the medical profession to prove that legislation for industrial safety, going far beyond its present scope, must be enacted; that it must be related much more than hitherto to the human element; and that the field of industrial medicine must be extended from the factory to the worker's home.

BIBLIOGRAPHY

Association of Industrial Medical Officers (1945) Report of Education Committee on Education in Industrial Health.
Board of Trade (1945) Provision of Employment in South Wales for Persons suspended from the Mining Industry on account of Silicosis and Pneumoconiosis.
Bridges, C. D. (1946) Job Placement of the Physically Handicapped, New York.
Department of Health for Scotland (1943) Health and Industrial Efficiency.
Fox, R. F. (1936) Arthritis in Women, London.
Fraenkel, E. F. (1943) *Brit. med. J.* i, 216.
Industrial Accident Prevention Associations (1945) Report of Annual Meeting, Toronto.
Industrial Welfare Society (1942) Health Services in Industry.
International Labour Office (1938) Industrial Accident Statistics, Geneva.
— (1945) Training and Employment of Disabled Persons, Montreal.
Medical Research Council (1940) Industrial Health in War, London.
— (1942) Personal Factor in Accidents, London.
— (1945) Health Research in Industry, London.
Ministry of Labour (1940) Medical Supervision in Factories.
Minton, J. (1946) *Brit. med. J.* i, 211.
Schmidt, L. (1942) *Brit. J. phys. Med.* 5, 145.
Wilson, A., Levy, H. (1941) Workmen's Compensation, London, vol. II.

NUTRITION IN GERMANY

THE PRESENT SITUATION

ON June 15 we referred to the latest findings of Colonel W. L. Wilson (U.S.A.), Sir Jack Drummond, F.R.S. (Great Britain), and Inspector-General G. Coulon (France) who formed a tripartite committee of investigation with the assistance of Colonel W. H. Sebrell and Lieut.-Colonel W. F. Ashe (U.S.A.), Dr. H. M. Sinclair and Mr. J. B. Lockwood (Great Britain), and Lieut.-Colonel M. Roche and Dr. G. Pierron (France). The following is a fuller summary of their report issued in Berlin on June 3.

FOOD CONSUMPTION

Groups of people were observed, and records studied, in Stuttgart, Kassel, and Bremen (United States zone), Hamburg, Hanover, Düsseldorf, and Essen (British zone), and Coblenz, Saarbrück, Freudenstadt, and Schromberg (French zone).

A large proportion of the population in these towns evidently get food in addition to the authorised rations, the well-to-do succeeding better than the poor. Most of this supplement is in the form of potatoes. In their first report (August, 1945) the committee recommended a calorie value of 1550 for the ordinary consumer, and this was approximately achieved at the beginning of this year; but it became necessary to reduce rations in the French zone in February, and in the British and American zones in March and April. Rations had previously been sufficient to protect town populations against starvation and to prevent serious malnutrition, but with no margin of safety. On the reduced rations the greater part of town populations are in danger, and with the threat of semi-starvation a greater proportion of supplementary foods will be diverted to the richest. Well-to-do families have been able to get 1000 calories per head daily to supplement a ration of 1000–1200 calories, thus meeting the minimum energy requirement of 2000 calories. Those who are unable to add more than 100–200 calories to the ration will show rapid loss of health and strength, as civilian internment camps have demonstrated.

STATE OF NUTRITION

Nutrition has significantly deteriorated since rations were reduced. Children under three years of age seem to be adequately nourished except in respect of vitamin D and iron. Nearly all get their milk allowance and their calorie needs are met. Rickets is becoming commoner in some areas, however, where supplementary vitamin-D products or cod-liver oil have not been obtained, and nutritional anæmia is increasing. The calorie needs of children between three and six are met in the British and United States zones, but the incidence of rickets is unduly high. The position is less satisfactory in parts of the French zone. Among children and young people between the ages of six and eighteen calorie deficiency has retarded or arrested growth. The children are generally underweight, and some are losing weight. Malnutrition due to deficiencies of vitamin A, riboflavine, and ascorbic acid is prevalent, and anæmia is common. For ordinary consumers the ration of 1550 calories, achieved before February, barely sufficed, when supplemented with unrationed foods, to maintain health. Since the reduction, their physical state has deteriorated, the poorer people suffering most. Adults are losing weight, and famine œdema, which had almost disappeared in January, is now increasing.

The calorie levels recommended by the committee for civilian workers other than miners have never been met, much less their full energy needs. Industrial production has therefore been unsatisfactory. The ration cuts have made the position much more serious, and will cause increased absenteeism and discontent, and hinder German recovery. The committee had recommended that miners should have 3400 calories daily, and before the cut they were getting about that in the British and French zones. The effect on production was good, but now miners in the Ruhr are losing weight, production has fallen, and absenteeism is increasing.

There is no direct evidence that pregnant and lactating women are suffering extensively, but a woman who cannot supplement a ration of 1400–1700 calories by at least another 1000 cannot meet the physiological needs of herself and her child. Last November the committee recommended a uniform ration of 2350 calories in hospitals, and this has been achieved in the American and British zones, but not in the French. Some institutions, including asylums, are not classified by the Germans as hospitals and in these, where the basic ration is not supplemented, patients are already starving.

Displaced persons not engaged in active work have been recommended a ration of 2200 calories, but their diet has not been generally reduced to this level, it seems, and there is no significant malnutrition among them. They are considerably heavier than German adults.

CONCLUSIONS AND RECOMMENDATIONS

The committee conclude that the general situation is alarming. With rations at their present level it is hard to say when more serious effects will become obvious because much depends on the supplies of supplementary foods, mainly potatoes, still available; these have saved the situation in the past six months. If further drastic cuts have to be enforced, owing to the expected fall in grain stocks, a catastrophe may follow. The greater part of the population in the large towns are facing disaster which may seriously retard the recovery of Western Europe and disturb its political development. At the time of publication of this report further cuts seemed inevitable, and it was concluded that the attempt to maintain a uniform state of health in the German population would have to be abandoned. The committee recommended that every effort should be made to meet the ration scales in the accompanying table.

They suggest that, since a uniform standard of health cannot be maintained, some sections of the population

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should receive priority, despite the fact that some parts of the population will have to suffer more in consequence.

Every effort should be made to extend the number and range of weighings in the three zones, and this work should be correlated with that of nutrition survey teams, so that a true rise in body-weight will be distinguished from that due to hunger œdema. They also proposed that they should review the position again at the end of ninety days, or earlier if there seemed to be need for it.

PROPOSED RATION SCALES

Ration category	*Calorie value*	*Milk ration (litres)*
0– 3	1000	¾ whole
3– 6	1200	½ whole
6–10	1550	½ whole or
10–18	1750*	¼ skimmed
Normal consumer	1550†	0
Pregnant and lactating women	2200*	½ whole
Moderately heavy worker	2000	0
Heavy worker	2500	0
Very heavy worker	3000	0
Underground miners	3400	0
Hospital patients	2350	0
Displaced persons (normal consumer)	2000	0

* These are lower than levels formerly recommended, and are enforced by the current situation.

† Recommendation of 1550 calories daily for the normal consumer assumes that some supplementary food will be available. Those who, through segregation, cannot be expected to receive such supplementary food should receive an appropriately higher ration.

ROYAL SOCIETY EMPIRE SCIENTIFIC CONFERENCE

AT the morning session of the conference in Cambridge on June 28, with Prof. C. E. HERCUS (New Zealand) in the chair, a discussion on the

Ætiology and Control of Infectious and Transmissible Diseases

was opened by Dr. F. M. BURNET, F.R.S. (Melbourne), who urged that more consideration should be given to the spread of infections from endemic areas. A detailed study of each case was preferable to arguing from analogy. From the ætiological aspect organisms were divided into two main groups—the parasite or commensal on the human being, and organisms surviving in a living environment distinct from man. There was also an intermediate group. Every infectious disease was complex and one of the pressing problems was to predict the spread of each one. This was difficult often because of unpredictable factors. Prediction was relatively easy, for example, in typhoid but not with the common cold. There was a real danger of the introduction of non-endemic diseases into Australia. Its environment was suitable for yellow fever, and a mosquito-borne encephalitis (X disease) had already made a transient appearance there. Human action in Africa had assisted the spread of anopheles mosquitoes by attempts at control. The widespread introduction of budgerigars into the U.S.A. had increased the incidence of psittacosis there. Sudden increases in virulence in organisms were often unpredictable. Virulent mutations were common in diphtheria and influenza. A virulent variant of poliomyelitis virus in Australia in 1937 apparently arose in a single schoolroom. The study of microgenetics illustrated the difficulty in predicting these mutations. Epidemics in the future would probably be air-borne. Epidemiological control was divided into three main parts: prevention by quarantine; more scientific control of agriculture and drainage; and further chemotherapeutic advances. Finally Dr. Burnet reiterated his opening remark that generalisations in infectious diseases were unsatisfactory; detailed study was the answer.

CONTROL OF INSECT-BORNE DISEASES

Dr. G. M. FINDLAY pointed to the great reduction in the incidence of insect-borne diseases in the Armed Forces during World War II. We could approach the subject in three ways: (1) there is no danger of spread; (2) there is some danger but our organisation is perfect; (3) there is some danger and further work requires doing because of the imperfect organisation at present obtainable. Some organisation. such as UNO, should take charge. *Aëdes egypti*, the vector of yellow fever, had spread from the Old to the New World before 1647 and today was being spread by more rapid means of transport. Similarly, malaria was transmitted to North America from West Africa by the slave-trade after the time of Columbus, and more recently the danger of carriage by planes had evoked legislation by the Brazilian government. Transmission had been simplified by the advent of the aeroplane. With yellow fever two factors had to be considered—the infected person and the vector carried in the plane. For the first we had yellow-fever immunisation, but here we were up against the multiplicity of yellow-fever certificates. There were seven types valid in England at the present time, lending themselves to forgery. There was a black market in forged certificates in Paris. International standardisation of the method of inoculation was required. To prevent the carriage of mosquitoes by plane necessitated sanitary control of aerodromes, which generally entailed considerable drainage schemes. Planes could be disinfested by the use of freon bombs, D.D.T., or similar compounds. As far as he knew no aircraft designers were incorporating any method of disinfestation in their new models. The present system was chaotic, and a resolution should be passed to the effect that an international organisation be established under UNO to control such methods as disinfestation of planes, sanitary control of aerodromes, and protective inoculations.

CHEMOTHERAPY, WITH SPECIAL REFERENCE TO MALARIA

Brigadier HAMILTON FAIRLEY, F.R.S., said that in the south-west Pacific campaign the efficacy of prophylactic mepacrine was shown by the low transmission-rate of malaria on return. Malignant tertian malaria was almost 100% prevented. 'Paludrine' was a true prophylactic in M.T. malaria since it destroyed the organism before the asexual parasites appeared in the blood, thus contrasting with such drugs as quinine and mepacrine. Paludrine was also a good schizonticide, and its action on the carrier caused some change in the gametocyte not demonstrable morphologically but which prevented the maturation of the oöcyst in the mosquito. The drug could be used in small doses at long intervals for organised mass prophylaxis in native villages. A possible loss of pre-immunity would have to be considered in such a long-term policy.

Prof. B. G. MAEGRAITH said that the ideal antimalarial drug should be non-toxic in both therapeutic and prophylactic doses. Therapeutically paludrine was non-toxic, for as much as 1.5 grammes daily for twenty days had been taken with only occasional abdominal pain and vomiting. Prophylactically, non-toxicity had not been established. For this there should be further trials and investigations. The mepacrine investigations were simplified by the organisations present during the war. The great difficulty now was in obtaining volunteers, but a glance at the morning paper with its reference to the capture of George Jackson had suggested to him the possibility of convict volunteers, following the precedent set by the U.S.A.

SANDFLY-TRANSMITTED DISEASES

Prof. S. ADLER (Palestine) pointed out that in contrast to the mosquito-transmitted diseases those due to sandflies showed a very limited distribution, in spite of favourable habitats in other countries. There had been no Old to New World transmission nor vice versa. The species in each case were quite distinct and typical. Air travel had produced excellent opportunities for vector transmission—for example, kala-azar to a country such as Australia. This did not apply to affected persons as the vector was absent. Dr. Adler made a special point of the extension of *Bartonella bacilliformis* to Colombia. The moot point was whether or not the Old World sandflies could be used as vectors for that organism. Experiments should be carried out in a non-endemic area such as England to determine this possibility.

SPREAD OF CHOLERA

Sir JOHN TAYLOR recalled that in previous times cholera had been spread all over the world, but now it was confined to the two main endemic areas—namely,

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Bengal Province and the Yangtse valley. In cholera there was no true carrier state. Spread was by human case and contamination of sewage and water. In this respect the regulation concerning the inoculation, before repatriation, of West African troops stationed in India was futile. In the average case no vibrios could be isolated after about five days from the cessation of symptoms. Contact carriers might be as high as 20%, but these cleared themselves of organisms fairly rapidly. The vibrio would survive in water for about 16 days. In spite of all that was known about the spread, there was still some unknown factor about cholera endemicity which demanded further investigation. It would require international coöperation to eliminate cholera from the Yangtse valley.

PLAGUE

Colonel Sir S. S. SOKHEY remarked that under modern conditions of housing and living plague showed a changed status as a world pandemic. The pandemic in the 14th century, which lasted 200 years, caused 12,000,000 deaths in its first two years. In the last pandemic of 1894, commencing in China, the mortality was lower, owing to increase in prosperity and better living conditions. Good housing was the best prophylactic. The problem which always confronted us was why an epidemic started and why it ended. Infection generally started in a given area as an epizoötic spread and was closely related to the rat's susceptibility to plague organisms. For example, in the Bombay area in 1932, of approximately 1,000,000 rats examined 9% showed susceptibility; in 1933 7% showed susceptibility; and in 1936 there was no susceptibility. Since then there had been no epizoötic spread, but susceptibility had increased to 15%. In the Bombay area there were two small epizoötic reservoirs of infection, which could be mapped out exactly, and from these infection spread to other areas by boats, grain ships, &c. There were organisations which attended to these endemic areas and attempted to eliminate infection. As far as he knew, there was no endemic silvatic plague in the Bombay area.

ANIMAL DISEASES

Mr. R. DAUBNEY saw a danger of rabies being introduced into this country because of the disregard of quarantine regulations. He cited an example of an officer returning from Africa with a dog which later developed rabies, with fortunately no human mortality, but 14 people were put to the inconvenience of anti-rabies inoculation. He also cited instances of the vectors of rickettsial disease failing to transmit infection, but later proved to be efficient vectors. There were apparently other factors, apart from the known ones concerned in the transmission of diseases—e.g., *Typanasoma vivax* was present in Mauritius in the absence of the tsetse fly. The tsetse fly was attracted to trains, planes, and any moving body, and in a period of three months nearly 4000 tsetse flies were removed from trains passing from one endemic to a non-endemic area.

Dr. J. DU TOIT emphasised the close relationship between medical and veterinary science, and cited numerous instances of counterparts between animal and human diseases—e.g., in the U.S.A. when an attempt was made to eradicate tuberculosis 4,000,000 infected cattle were killed. In South Africa anthrax was once a serious and common disease among humans. Now, after the compulsory vaccination of sheep and cattle, this area had been cleared, and there had been no deaths from this cause during the past two years. Similarly, sleeping sickness in animals and human beings was identical, and, contrary to our accepted ideas, this disease can be transmitted by many species of the tsetse fly. He called for close coöperation and mutual assistance between the veterinary and medical services.

REGULATIONS

Major-General Sir ALEXANDER BIGGAM pointed out the variations in protective inoculation regulations, both internationally and in the same country. This was most definite in reference to smallpox vaccination. He suggested a recommendation calling for uniformity in health certificates for prophylactic inoculation for passengers travelling to or from endemic areas.

Brigadier J. S. K. BOYD discussed the legislation from the point of view of the passenger, and emphasised that we should ensure that there be as little inconvenience as possible, consistent with adequate protection. He pointed to the futility of the anticholera inoculation of West African troops returning home after service in India, and suggested that a resolution be passed that such a procedure was unnecessary. Further work was required to find more exactly the conditions necessary for vector transmission of diseases. It was not clearly understood why *Anopheles gambiæ* should have recently spread from the Sudan to the Middle East. This had been blamed on the British Army, but he could not see why, through countless centuries, they could not have been spread by the Nile traffic. There were two main points in present legislation—the protection of the public and the protection of the legislator. We required a little more of the former and a little less of the latter.

ENTOMOLOGY

Dr. E. H. CLUVER said that insect-borne diseases were a major threat to southern Africa, and the problem should be tackled by entomologists. This was almost impossible at present as trained medical entomologists were very few. Only against the three main insect-borne diseases could we inoculate—plague, typhus, and yellow fever. Preventive inoculation at its best could only be an interim measure. The opening of the new gold mining area in South Africa provided a further serious problem in the possibility of introduction of these arthropod-borne diseases. There was need for intensive entomological study, and for this a good team of medical entomologists was required.

DISCUSSION

Professor ADLER said that there should never be any hesitation in forfeiting pre-immunity, by treating a population in hyperimmune areas. An epidemic should always be treated as it arose, and the fear of producing resistant strains of disease organisms was not warranted. For instance, sexual multiplication of the parasite generally produced a loss of the required resistance to chemotherapy.

Dr. DU TOIT, however, pointed out that arsenic had been used as one of the chief agents for killing ticks, and it had now been shown that the most susceptible tick has developed an arsenic-resistant strain.

Dr. D. M. BLAIR (Southern Rhodesia) said that the spraying of planes was so badly done that it was better not done at all. There was no uniformity of procedure, the man on the job was very seldom provided with the proper instructions, and it was left to the common sense of the operator. International sanitary conventions were being misused for purely political reasons. He cited the case of a shipping company enforcing the letter of the law in prophylactic inoculations instead of using common sense. It would be of value to have a uniform international certificate for use on any route and by any means of progression.

Dr. FINDLAY, at the request of Professor Hercus, repeated his suggested resolution that an international organisation should be established under UNO to control vaccination, disinfestation of aeroplanes, and sanitary control of all aerodromes.

Dr. F. MCLAGAN (Sierra Leone) pointed to the lack of trained sanitary inspectors and suggested that more should be trained for this very important position in the tropics.

Dr. BURNET said it was obvious that the ætiological approach was very important, and it had shown the great complexity and lability of pathogens and vectors. Drug-resistant strains could be expected when a large proportion of the pathogen population was being treated. This was shown with gonorrhœa and the sulphonamides, and the large-scale daily sulphonamide prophylaxis against streptococci in U.S.A. Therefore, in malaria, we might expect drug-resistant strains to arise when an effort was made to deal with the whole of the native population. Finally, if we applied modern methods of treatment to the overcrowded peoples of the tropics we must expect to have to deal with a population increase, producing a concomitant inadequate nutrition.

Professor HERCUS, summing up, said that the future called for a more concentrated coördinated plan of effort, as we could not afford to waste man-power. A definite strategy in research was necessary, and it was by this means we could go forward on a plan of definite action.

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In England Now

A Running Commentary by Peripatetic Correspondents

WHEN a Dutch friend asked me about our approved schools, I told her what little I knew, adding smugly that three-quarters of the children sent there became good citizens. "But what about the other quarter?" she wanted to know; and I had to admit that with these the approved schools failed. "That is because you do not look after them early enough," she said; and she began to tell me about a club at The Hague.

Housed in an old large school, rather shabby to look at ("If it looks too grand they will not come"), the Sparrows Club opens at five o'clock every day. It was started many years ago as a club for the very poorest children, those who live in the worst slums, and whose parents are often problems in their own right. Any boy or girl over the age of six can join, and every evening some twelve classes are running in the club. Children can attend any classes they please—a different one every night if they like—learning carpentry, painting, metal-work, acting plays they have written themselves, or finding out how to make music. If they don't feel like learning anything they can go to the destruction class and break things up—old beds, chairs, ironmongery, and other derelict household equipment, the component parts of which are stacked and sold as firewood and scrap-iron, the money going into the club funds. Children in other classes make toys or furniture, and these are exhibited and sold at monthly sales. A child is allowed to keep one out of every three toys he makes, so that he is contributing something to the commonwealth and also getting a just reward.

There are very few educated teachers in the club: nearly all the classes are taken by older boys, or by fathers and mothers who have joined out of interest in the doings of the children. In the games room, for example, chess is taught by a crossing-sweeper; and the leader of the club—a man of lovable and vigorous character—is himself a workman. During the slump years many unemployed men and women joined the club, and worked there. Dutch people receiving public assistance are required to report twice a day to a bureau, to prove they are not working and to get a card stamped. This unpopular regulation meant long hours of queueing for the workless; but the club, besides giving them something to do, arranged to stamp their cards for them—a great attraction. They could not be paid for the work they did, of course, but they were credited on a system of points, and were able to buy household goods at the monthly sales, to the value of the points they had earned.

The club has a membership of about 1200, and room to receive about half that number on any given night. Its chief aim is to train the characters of the children, to give them self-respect and self-confidence, and to keep them from becoming delinquent. In other words, it is an important piece of social and preventive medicine. "We tell them frankly what people say of them," my friend explained earnestly. "'They think you are no good,' we tell them, 'but it is not true, and you must show it is not true.'" The club is not interested in brains as such: leaders with brains can lead people astray. When new gangs of boys and girls come in, the club tries to break up the groups and to spread them among the others, who have already learned to give more weight to qualities of character than to glibness and facility. Boys and girls mix freely in the club, which they run themselves; they learn by work, and they enjoy the work because they take it as a game. In making their own designs for toys or furniture, and carrying them out, they develop their creative side, and since, in later years, most of them will have to struggle for themselves, they need the self-reliance which comes of devising something and carrying it through successfully.

The club runs summer camps, not only for the children but for its adult members, and for families who want to go camping together. The children save their pocket-money towards the cost of running the camps, which are very popular. Parents and children together write and circulate a club newspaper, and the boys run a football team which competes against teams from the police. "I explained this to some boys in one of your English clubs," she said, "but nobody laughed. Do not your boys then regard the police as enemies?" (I said she should try Ireland.)

The International Red Cross have just decided to give their support to the Sparrows—who have so far depended on their own exertions and on voluntary contributions. This means that new clubs of the kind will be opening elsewhere in Holland, and perhaps elsewhere in Europe. What about a few here?

* * *

Cheerfulness is a plant which flourishes in odd places, and I have learnt to go for refreshment in dark moments to the unlikely surroundings of a V.D. unit, patronised by some of the toughest specimens of the underworld. But the other day I found Sister rather downhearted. "I can't make up my mind, doctor," she explained, "about men and women, I mean. Which of the two is the worse. Half the time I say all men are brutes; the other half I want to start a Young Men's Protection Association." Clearly there was a story here and I pressed for details. "Well, you know that nasty little piece of peroxide in the side-ward with SY, GC, and a baby on the way? Would you believe it, as smart a young sergeant as you ever saw has come along and insists on marrying her. And he's not responsible for any of her troubles. He just thinks she's an angel who never had a chance to flap her wings!" I pointed out that chivalry was such a rare asset nowadays that perhaps it ought to be encouraged. The too-experienced lady shook her cap sadly. "No. The trouble is the poor boy's dreaming, and Heaven help them both when he wakes up!"

* * *

This morning we organised a real shoot for the wild pig that roams the forests here. Beaters, German forest men, were laid on for seven in the morning and we arrived about an hour late, having stopped for breakfast (wet) on the way. The chief beater, who took things very seriously—shades of Goering's hunting efforts—was dressed for the part in plumed hat and camouflage. He was very shocked when, instead of going on with the business, the colonel ordered the cellar to be brought from the car, and we settled down to another brief session.

Ultimately we staggered along to a corner of a dense forest while the beaters thrashed down towards us from the opposite side. I was expecting to be safe in a box, and was horrified to find myself faced with some exceedingly tall and fierce brutes (dangerous, I gather, if tickled), with only a rifle and my marksmanship between me and their long wicked tusks. We saw several, charging in all directions, but except for winging a beater they did no harm, thank goodness. I am sure I saw one boar with a waistcoat on, but I was told this was unlikely. On my advice (which he always takes) the C.O. ordered champagne afresh and we commemorated our efforts at this noble sport with another of our hepatic teasers, much to the disapproval of forest, boar, beaters, and all.

* * *

We have all got a volkswagen now, to help us in our mad career round the country. They are ingenious little things, with an engine in the back which can take you to most places at a steady chugging fifty or so. There's hot-air heating, and a selection of lights on the dashboard meaning various things, I'm not quite sure (as usual) what. If the thing won't start, again I'm not happy as to the proceedings, but gather that the best thing to do is either to get the central pin out and build the whole machine afresh at the side of the road, or post the chariot back to the makers, when a new one will be supplied stat—that is, if one has collected sufficient coupons from the outer wrappers of the "Make Your Colon Conga" laxative which is being used out here. Being on the wrong side of six feet and thirteen stone makes volks-wagen travelling difficult. But, by inserting myself in the left occipitoposterior position, and rotating anteriorly when most of me is past the gearbox, I manage it. If I am carrying two passengers of similar proportions they must insert themselves as described, and the driver's breech must present through the window so as to allow at least two to breathe at a time. Actually it is a very comfortable little car, but I am not very happy about leaving it too long in the sun; one never knows what might happen if the glue melted.

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Parliament

ON THE FLOOR OF THE HOUSE

IT is a question whether we should not rename our sessions, and instead of calling them parliamentary days call them parliamentary nights. On Monday, June 24, the House of Commons began its discussion in committee on the Finance Bill at 3.33 P.M. and continued without a break until Tuesday, June 25, at "one minute to eleven o'clock A.M." as the Hansard report records. The House then began again with Tuesday's questions at 2.30 P.M. and continued without a break until 4.6 A.M. on Wednesday. The next two nights were relatively early—i.e., we finished about midnight.

But parliamentary days also continue, and the committee stage of the National Health Service Bill is now being taken at afternoon as well as morning sessions. Which means that some members are working almost round the clock. And with all this the rules of order and the ceremonial of Parliament—which is invaluable in keeping order—are maintained.

Though the National Health Service Bill has run into some stormy weather, Skipper Aneurin Bevan is determined to bring it to the report stage on the floor of the House early this month. Most of the clashes hitherto have been on well-defined differences of opinion between supporters and opponents. But the amendment moved by Mr. Hopkin Morris opened up a new field. Under the Bill it was proposed that any minor complaints by "potentially aggrieved persons" (to use the Minister's words) should be made to the local executive council with which the general practitioner was in contact. From this decision there was an appeal to a tribunal and thence to the Minister. Mr. Hopkin Morris argued that an appeal should be possible from the tribunal to the High Court. With the Communist support of Mr. Piratin, and the Labour support of Dr. Morgan and Dr. Clitherow, the Opposition defeated the Minister on a division. By the afternoon Mr. Bevan was admitting that the committee was tired, while others thought it had passed the "point of irritability." It is the general opinion that all the differences on this Bill are committee differences only, but as fatigue blurs judgment some of them have taken on the aspect of fundamental principles.

Government and Opposition conflict is generally sharpening, and the announcement of bread-rationing—which we are the last European country to adopt—has sharpened it further. MEDICUS, M.P.

THE HEALTH BILL IN COMMITTEE

On clause 41 Mr. H. LINSTEAD moved on June 26 the first of a series of amendments which gave the committee the opportunity of considering the optical services provided under the Bill.

OPHTHALMOLOGISTS AND OPTICIANS

According to the white-paper the aim was to provide an eye service as part of the hospital and specialist services in special departments and clinics, with sight-testing and dispensing opticians taking part under medical ophthalmologists. But till this scheme could come into operation there was to be a supplementary scheme making use of suitably qualified general practitioners and opticians. It seemed to him that the Minister's intentions stood or fell on the question of man-power. From the best inquiries he had been able to make we had at present 500 ophthalmologists recognised as specialists. Possibly there was the same number of general practitioners with some specialist knowledge of eye diseases. If it was assumed that ultimately the Minister would be able to provide 1000 first-class medical ophthalmologists there would then be roughly only 1 for every 45,000 of the population. Circumstances would compel the Minister to maintain his subsidiary scheme in operation for many years. We had, Mr. Linstead believed, something like 7000 opticians, but once the main scheme was developed perhaps only half of them would be required. How could the Minister expect any profession to develop with such a guillotine hanging over it?

Mr. SOMERVILLE HASTINGS thought that the Minister would be able to use fully the services of the opticians and the ophthalmic surgeons working together as a team. Till the complete scheme could begin he hoped that some of the service would be carried out at health centres. But as soon as the scheme was fully developed there should be only two types of worker—the ophthalmic optician and the ophthalmic surgeon, leaving out the general practitioner who could not be a real expert in this work.

Colonel M. STODDART-SCOTT suggested that if there was to be a well-staffed service the Minister should lay down educational standards and even provide for a register of ophthalmic opticians. Mr. A. BEVAN affirmed that he wanted to encourage good people to become opticians and to raise their professional attainments. Representatives of eye specialists and eye-testing opticians would meet at his invitation next week to discuss, he hoped in terms of cordial coöperation, the relative status of both sections. There would be refractionists in the large health centres. The eye specialist would be centred on the hospitals, but would move freely between the health centres and the hospitals. The only difficulty was the shortage of specialists, and therefore they would have, for a time, to make do with something less than the ideal. The amendment was withdrawn and the clause was ordered to stand part of the Bill.

DISQUALIFICATION OF DOCTORS

Mr. P. PIRATIN moved an amendment to clause 42 to make it obligatory on the tribunal to inquire into all cases, and not only on representations from the executive councils. If a complaint was recognised as serious, even though it had been turned down by the local body, the complainant should have a right to have his case heard by the tribunal. Mr. BEVAN said that the tribunal was an important body and he did not want it to be a source of petty persecution of the profession. If the tribunal were called upon to investigate allegations against doctors brought by any person at all, it would be a curious situation. He must resist the amendment. Minor allegations were to be sifted first of all by the local executive. The amendment was withdrawn.

RIGHT OF APPEAL

Mr. R. H. MORRIS moved an amendment removing the right of appeal to the Minister from a decision of the tribunal and substituting the right of appeal to the High Court. The Minister himself might be a party to the proceedings before the tribunal, and as the Bill now stood he was also the final court of appeal. Why should the doctor lose his right as a citizen to have his case judged by an independent court, especially when his professional reputation and livelihood were at stake?

Mr. H. WILLINK thought that from the point of view of difficult questions of evidence a tribunal, consisting of two lay members and a lawyer, was not an immensely strong body, yet it could direct that a man's name should be removed from the lists of one or all the executive councils. The General Medical Council had lately come in for considerable comment. The tendency of public opinion was that there ought to be resort to the courts in cases of this importance.

Mr. BEVAN intervened to prevent the committee from being stampeded by emotions aroused over a related but different subject. The G.M.C. procedure might or might not be altered, but it was not a matter for this Bill. They were not discussing whether a man had been guilty of unprofessional conduct, but whether a person who had contracted to carry out certain duties was carrying them out to the satisfaction of reasonable people. Since they were creating a service in which overwhelming numbers of doctors would participate he had decided that exceptional protection should be given to individual doctors against the possibility of injustice. He had not thought the existing machinery, by which the local committee considered the complaint and appeal was made to the Minister, to be adequate. He had therefore put another body between the local executive council and the Minister. For example, a complaint

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might be made against a doctor that he was continuously drunk. That complaint would be investigated in the first instance by a body on which the medical profession itself had half the representation, and the other half would be drawn partly from nominations by the Minister and partly from the local health authority. If that body said that the man ought to be removed from the list he could appeal to the tribunal with proper legal procedure, and if the tribunal upheld the first decision the doctor could still appeal to the Minister, which meant in effect to the House of Commons. The possibility of injustice being done after these three investigations was negligible. The suggestion that a judge of the High Court was a better person to decide whether a doctor had carried out his job properly than the executive of the profession or the tribunal or the lay Minister was just flat nonsense. Parliament imposed upon the Minister an obligation to provide a service. Under the amendment the courts would decide the instrument through which he would give the service. If the procedure of the Bill was not carried out, if the various tribunals exceeded their powers, the appellant could still go to court. But he could not admit that the courts should interpret whether the doctor had, in fact, been a good servant to the people. He was satisfied that the doctor would be better off under the Bill, because if an offence was committed in one area he would only be removed from that particular list. He could go elsewhere. Whereas if he went to the courts the case would be publicised throughout the country.

Mr. PIRATIN thought that if the Minister had given greater responsibility to the regional boards on the question of practitioners there might have been a case for the Minister to be the final judge. But the Minister was the employer and he was framing the whole scheme in a highly centralised way. Mr. LINSTEAD pointed out that the Minister or the tribunals set up under the Bill would possess powers as comprehensive as the powers of the statutory professional disciplinary bodies. If a complaint came before the G.M.C. it could ultimately reach the High Court. If there were two channels of discipline they ought to be brought to a head at the same place. Mr. HASTINGS declared that to determine whether an individual was fit to remain a member of the National Health Service could not be the function of the High Court. As a member of the medical profession he felt that all those who would be employed in this very important service would have all they needed against any possibility of injustice or victimisation. But Mr. J. S. C. REID thought that the words "prejudicial to the efficiency" of the service were vague. Was it to be a factual investigation of a complaint or a policy investigation of the kind "Is this the right sort of man to have in the service?"?

The committee then proceeded to a division, and Mr. HOPKIN MORRIS's amendment to leave out the right of appeal to the Minister was carried by 19 votes to 17—the first defeat of the Government since the Bill went into committee. The part of the amendment substituting an appeal to the High Court for an appeal to the Minister was then negatived by 17 votes to 16, thus leaving no right of appeal in the Bill.

On resuming the session in the afternoon the CHAIRMAN suggested that nothing further should be done with the clause, but that the Minister and those who disagreed with him should submit new clauses on report stage. Mr. BEVAN, however, saw no reason why the clause should not be passed as it was and promised that he would consider later what steps should be taken to remedy the unfortunate consequence of the pyrrhic victory of the morning; for, he pointed out, as the clause was now amended, there was no appeal at all. It was proposed, he added, to provide by regulation for evidence to be taken on oath and for legal representation, and for other forms of discipline, besides removal from the list, to be imposed by the executive councils and the tribunals for minor offences. The clause as amended and clause 43 were then passed.

CHARGES FOR DENTAL TREATMENT

Subsection 1 of clause 44 deals with the recovery of payment for appliances more expensive than the prescribed ones, and Mr. HOPKIN MORRIS moved an amendment extending this provision to dental treatment. Captain J. BAIRD described the amendment, which he opposed, as the main issue of the Bill for dentists. Even as the Bill stood he believed that there was a class distinction which would allow wealthy or middle-class patients to buy appointments with a dentist in time of scarcity. Commander T. D. GALBRAITH pointed out that while the shortage of dentists existed those who could obtain full-time private practice would not come into the scheme unless offered some inducement.

Mr. BEVAN said he had met the representatives of the dental profession, and while he would not go so far as to say that they wholeheartedly and enthusiastically accepted his interpretation of what was intended he did not discern any hostility in their reaction. If he accepted the amendment everyone would think the Government had gone crazy. Where a more expensive form of treatment was necessary for the health of the patient it should be given, and he was prepared to discuss with the profession what regulation could be made to that end. But he was not prepared to accept a subvention for unnecessarily expensive treatment because it might be profitable to the dentist. The amendment was withdrawn. Mr. HASTINGS registered his objection to the clause because it admitted two types of treatment. Mr. BEVAN did not dispute this risk, which he admitted was a continuing danger in the service; but surely it was a weakness not in the scheme but in mankind and in social reality. If the State were to provide everything free the whole scheme would break down. While he admitted a State service might thus appear stodgy and cheap it did universalise appliances and treatment which would otherwise be inaccessible. The State must try progressively to improve the standards which it made freely available. Clauses 44 and 45 were passed.

RENT FOR SURGERIES

Mr. PIRATIN moved an amendment that charges should not be exacted from practitioners who used the health centres. He thought a preferable arrangement would be to pay a fee to doctors who had not access to health centres. Mr. BEVAN said that a doctor's remuneration took into account his professional expenses, including the provision of a surgery. When the doctor was given a consulting-room at a health centre it was therefore reasonable that he should pay for it. Mr. Bevan was anxious to encourage doctors to practise at health centres, and the rents charged would not be such as to discourage them from settling there. The doctor's wife would probably be a great help in inducing her husband to use the centre.

Provision of a health centre, Mr. Bevan pointed out, would not exempt general practitioners from domiciliary service and they would be expected to live within reasonable reach of the area they served. Doctors at a centre would no doubt be able to make arrangements for emergency calls, but the medical profession had itself emphasised the necessity of continuity of treatment by the same doctor for the same patient, and personal contact must be maintained. Clauses 46 and 47 were ordered to stand part of the Bill.

Sir HAROLD WEBBE moved an amendment to clause 48 providing that optical practitioners, as well as dental and medical, should have refresher courses, and Mr. HASTINGS put in a word for all other health workers, including nurses. Mr. BEVAN said if the language of the Bill did not already give him power to provide such courses it would certainly be amended, and the clause was ordered to stand part of the Bill.

ACCOMMODATION FOR MENTAL PATIENTS

When the committee resumed on June 27, clause 49, transferring to the Minister certain functions of the Board of Control, was passed with drafting amendments. Mr. C. W. KEY moved an amendment to clause 50 enabling the Minister as a temporary measure to include in the designation "mental hospital" a small poor-law institution, or wards in such an institution, where only mental patients are accommodated. These patients would then come under the care of the medical and nursing staff of the neighbouring mental hospital. The hospital management committee would be responsible for their maintenance, and the poor-law authorities would cease to have any statutory duties to these patients, though they would have to remain in their present institution

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till there was adequate accommodation for them in a proper mental hospital.

Mr. Key also moved an amendment removing from the clause words which would unnecessarily restrict the Minister's power to transfer a mental patient to an institution nearer his home because it happened to be in another region. Both these amendments were passed and clause 50 was ordered to stand part of the Bill, as were clauses 51 and 52.

PAYMENT OF GRANTS

Mr. Key said that it was hoped to get the Bill amending the block grant system to local authorities into operation before the National Health Service Bill itself came into operation. Clause 53 was passed.

On clause 54 Sir HUGH LUCAS-TOOTH asked whether the regional board would have to submit detailed budgets. Would they be allowed to carry any surplus forward at the end of a year? Mr. KEY thought that grant was the wrong word to use. The Minister had to provide the whole funds of the regional boards and of the hospital management committees, and must therefore be answerable for the sums allotted. The management committee would submit to the regional board an estimate of its expected expenditure so that the board, as instrument of the Minister, should have an idea of the character of the service to be carried out. From the information received from the committees, the board would know what money was needed for its area, and it would be able to negotiate with the committees. The board's contemplated expenditure would then be submitted to the Minister, who would consider it in view of the expenses of the service as a whole. But within the limits of the sum approved, the boards and committees would have considerable latitude. Obviously, any deficit would have to be made good at the end of the year and any surplus carried through to the next budget. Endowment moneys were entirely outside these budgets and would not influence allocations. Clauses 55 and 56 were passed.

MINISTER'S POWERS OF DEFAULT

On clause 57 Mr. REID moved an amendment seeking to exempt the Medical Practices Committee and the Dental Estimates Board from the Minister's power to supersede bodies which did not behave. They were bodies of some independence and, though appointed by the Minister, were not his agents in the same sense as an administrative body such as a regional board. Mr. BEVAN said it was impossible to impose responsibility on the Minister to provide a service and then create an independent body in the service who could refuse to carry it out. Only in most exceptional cases need these powers of default be exercised. After what Mr. Bevan termed "a torrent of synthetic indignation" from the Opposition, the amendment was turned down and the clause was accepted.

ACQUISITION OF LAND

Mr. KEY moved amendments, which were passed, making applicable to the authorities under the Bill powers for the compulsory acquisition of land contained in the 1946 Act. On the question that the clause stand part of the Bill, Mr. WILLINK pointed out that for many years to come the Minister would be hungry for hospital accommodation, but "any land" meant land with buildings and consequently the Minister would have power to acquire any small hospital or nursing-home set up under private initiative for special work. He asked for an assurance that the Minister had no desire for a complete monopolistic set-up with regard to the institutional treatment of the sick. Mr. BEVAN admitted that in an emergency it might be necessary for the welfare of the people that accommodation should be taken over, but disavowed any intention that the National Health Service should become "a huge monopolistic tree in the shade of which nothing else would grow." No Minister of Health with a health service worth defending would try to prevent the growth of forms of therapy which might establish themselves. He believed that anybody could go on experimenting without the fear that the Minister of Health would pounce upon his buildings and apparatus. The clause was ordered to stand part of the Bill.

GIFTS TO HOSPITAL MANAGEMENT COMMITTEES

Mr. WILLINK moved an amendment to clause 59 including hospital management committees among those who should have power "to accept, hold and administer any property upon trust for services connected with hospital services." Mr. HASTINGS saw grave danger in the amendment, through which another voluntary-hospital system might grow up. He feared that some committees might neglect their administrative duties to collect money which would make them to a large extent independent of the Minister.

Mr. BEVAN said that if the amendment was accepted it would not destroy the scheme, for the hospital management committees were already sharers in the endowments. In the day-to-day administration of the hospital system the management committee was more important than the regional board. If the scheme was to succeed the committee was the body which would "warm up" the whole administration. Because he recognised the danger that uniform regulations would destroy the spontaneity of the administration, he had not taken hospital endowments into the Exchequer, but if that money were to remain at regional level it would not fructify. Research, for instance, he hoped would be done by the health service itself in the teaching and other hospitals, and the boards would not really have much to do with it. But Mr. Hastings had put his finger on a danger. We did not want the hospital management committees to become such autonomous bodies as once more to atomise the whole structure. As Lord Moran has pointed out, one of the merits of the scheme was to bring the universities' influence right down to the local hospital. At present certain specialists—the prima-donnas of the operating-theatre—were identified with certain hospitals not wholly on professional grounds but partly, at least, for their ability to charm money out of those who possessed it. Still, Mr. Bevan thought that it should be possible for the hospital management committees to accept gifts, but he did hope they would not start begging in the old way. He was prepared to make some amendments to the scheme and he suggested that Mr. Willink should withdraw his amendment on the understanding that on the report stage this would be included along with other alterations. The amendment was accordingly withdrawn.

INTERIM FINANCES

Mr. D. L. LIPSON was anxious that the Minister should make a public appeal emphasising the present need of the hospitals till the State actually took them over, and making clear that the endowments would only be taken over once, and that gifts made after the scheme came into operation could be retained. Indeed, could not gifts made in the interim period also be retained?

Mr. BEVAN pointed out that the hospitals were getting into financial difficulties even before the Bill was brought forward, but he agreed we should try to keep the hospitals up to the highest possible standard. The estimate as to what the hospital endowments would be was pure guesswork. It would take some time to disentangle the subterranean assets which hospitals concealed while running overdrafts into which they hoped to suck charitable endowments. He could not therefore promise that until the vesting date contributions made to hospitals should remain there, for he did not know what the situation was. He reassured Mr. Hastings that he would not consider giving the house committees of the individual hospitals power to accept gifts and hold property, but only the hospital management committees. Clauses 59, 60, and 61 were accepted.

SALARY OF THE M.O.H.

On resuming the discussion of clause 62 Mr. LIPSON asked if it was necessary for the Minister to take power to fix the salaries of officers, not only of the regional boards and executive councils but also of the local authorities. Mr. LINSTEAD, speaking as vice-chairman of the joint negotiation committee of the hospitals staffs, welcomed the Minister's intervention. Mr. BEVAN said he must resist the amendment, for it would disappoint many health workers. Where machinery for negotiation existed it was intended to use it, and where it did not exist to create new machinery on which the local authorities would be represented. It was surely undesirable that health workers performing the same work should be paid differently in different parts of the country. Moreover, they wished in the new proposals to give opportunity for easy transfer with superannuation

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benefits from a local health service to the National Health Service and vice versa. The amendment was negatived and the clause ordered to stand part of the Bill. Clauses 63 to 68 were also agreed to.

REGULATIONS AND ORDERS

When the committee met on July 2, Mr. BEVAN said he was inclined to adhere to the arrangements laid down in the Bill for affirmative resolutions, orders, and regulations.

Mr. WILLINK, moving that the distribution of endowment funds should be the subject of parliamentary resolution, suggested that the structure of clause 69 was surprising; an affirmative resolution by Parliament was required only for questions of superannuation and transfer and compensation. He thought that the proposed system of control was unsatisfactory in three respects. First, an explanation of the redistribution of hospital endowments should be incorporated in the Bill. (Mr. BEVAN intervened to point out that qualitatively the distribution had already been decided by the House and by the committee; and the House of Commons would not like to be mixed up with the local issues involved in its quantitative distribution. Mr. WILLINK replied that the Minister should take the initiative and explain now rather than wait for prayers to Parliament from particular areas.) Secondly, the constitution of regions should be brought into the scope of affirmative resolutions; there was still uncertainty about the number and extent of regions, and there should be a debate to decide whether the Minister's decision on this important and still obscure issue was the best. Thirdly, there should be some control to meet the case of defaulting hospital boards, management committees, and local authorities.

Sir HUGH LUCAS-TOOTH said that if the Minister would go some way towards meeting these suggestions, parliamentary time would be saved. However money was distributed under the Hospital Endowment Fund, representations would be made to Members. Would it not be better if the Minister were to tell the House what he intended to do and give his reasons? Constituents felt that the constitution of the regional boards was one of the most important single items in the Bill, and the House of Commons should be given an opportunity for discussion.

Mr. BEVAN said he would see whether wording could be included to permit discussion of the constitution of regional areas. He reiterated that discussion of the distribution of endowment funds should be kept off the floor of the House as much as possible. The global figure would be the same whatever the regional distribution; it should be a matter for objective discrimination by civil servants. Mr. Willink's motion was negatived.

Mr. Bevan moved an amendment to ensure that variation of the Central Health Services Council by order should be subject to negative resolution by Parliament. This was carried, and the amended clause was ordered to stand part of the Bill. Clauses 70 and 71 were also ordered to stand.

WINDING UP OF BODIES

Under clause 72, Mr. BEVAN moved an amendment that where bodies were to be wound up on the appointed day, rights and liabilities of these bodies under any arrangements for payment of superannuation benefits in respect of officers who had ceased to be employed before the appointed day should be transferred to the local authorities by which the bodies were appointed, or, in the case of joint committees or joint boards, be apportioned among the constituent authorities. The amendment was carried, and the clause was ordered to stand part of the Bill.

Proposed New Clauses

Mr. KEY moved a new clause dealing with the provision in all hospitals of educational facilities, which were to be arranged by the local education authority or voluntary organisation, at whose disposal facilities would be placed by regional boards or hospital committees. It was agreed to incorporate this clause in the Bill.

Mr. KEY moved a clause to exempt from stamp-duty drafts, orders, or receipts given by or to an executive council for money payable in pursuance of the Act, or an agreement by any person with an executive council for services under part 4 of the Act, or any document in connexion with the transfer of property or liabilities from an insurance committee to an executive council. The committee agreed to adopt this clause.

Mr. KEY moved a clause empowering local authorities to buy and store goods for regional hospital boards, boards of governors of teaching hospitals, hospital management committees, or executive councils. This would facilitate central distribution, in which, he said, there were obvious advantages. It was agreed that the clause should be included.

INDUSTRIAL MEDICAL SERVICE

Mr. PIRATIN moved a clause calling on the Minister to frame within five years of the appointed day a scheme for an industrial health service. Mr. BEVAN said that the industrial medical service would in time fall into line; he hoped that before the end of the present Parliament the future industrial service would be seen more clearly. Dr. H. B. MORGAN said that there was need for more research and for better education of medical students in industrial medicine. Mr. V. J. COLLINS said that part-time factory doctors, who got industrial appointments only because they had purchased practices, were ignorant of the work; there was need for more experienced men in industrial medicine. Mr. BEVAN pointed out that research was already proceeding, and that under the Bill treatment for industrial diseases would be provided, though not actually in factories. Colonel STODDART-SCOTT said that if any service should be nationalised, it was that of industrial medicine. The clause was withdrawn.

Mr. PIRATIN moved a clause to enable local health authorities to delegate administration of services to local authorities. He said that he had in mind the case of the large urban district councils and the metropolitan boroughs. Mr. BEVAN replied that this would destroy the unity of the service; delegation, he suggested, caused confusion. Mr. LIPSON called for delegation of authority in the name of the efficient non-county boroughs. There was a strong argument for spreading responsibility, which alone would keep alive local government as it was now known. The clause was rejected by 21 votes to 12, and the committee adjourned until the afternoon.

FROM THE PRESS GALLERY

Rationing of Bread and Flour

On June 27 Mr. JOHN STRACHEY, Minister of Food, announced in the House of Commons that bread and flour will be rationed from July 21. The Government, he said, have only reached this decision because they are convinced that to fail to ration bread and flour at the present time would be to take an unjustifiable risk with the basic foodstuff of the British people. They are determined that every family in this country shall be sure of its share of bread and that that share shall be, so far as humanly possible, adequate to the individual needs of its members. The scheme will cover bread, flour, and flour confectionery. In ounces of bread per day the rations for different groups will be as follows

Children—	
Under 1	2 oz.
From 1 to 5	4 oz.
From 5 to 11	8 oz.
From 11 to 18	12 oz.
Expectant mothers and women manual workers	11 oz.
Men manual workers	15 oz.
All other adults	9 oz.

The workers who will receive the higher scales will number some 12 million. The statutory scale of provisions for seamen will be adhered to.

The housewife will be free to take any part or all her ration in flour or flour confectionery instead of bread and to shop wherever she pleases. The ration will be measured in bread units. A 1 lb. 12 oz. loaf will cost 4 bread units, 1 lb. of flour 3 bread units, and 1 lb. of flour confectionery 2 bread units.

Allowances to catering establishments and institutions will be similarly restricted but the supply of bread and flour will be safeguarded for the "meal-on-the-job" scheme, whether in the form of industrial canteens or

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of packed meals. Workers who have no access to canteens and who now have the special cheese ration will be able to secure coupons for an additional 6 bread units per week to assist them in providing packed meals from home. Special authorisations—e.g., for the benefit of agricultural workers at harvest time—will be granted for bread as for other rationed foods.

The Government believe, however, that even the above gradings as between different consumers will not sufficiently meet the wide variations in individual and family needs for bread, and the bread-unit coupons will therefore be interchangeable at the food office with ordinary points. The rate of exchange will be at the rate of 1 bread unit for 1 point, but for efficiency in control the food offices will only make the exchange in multiples of 8 at any time during each four-week period: in other words, it will not be possible to change less than 8 bread units into 8 points or vice versa. This provision, said Mr. Strachey, will have two effects. On the one hand it will offer an inducement to families which use less bread and flour than their ration to abstain from drawing their full ration; on the other, it will enable a family which finds that it needs more than its bread ration to supplement that ration by sacrificing some of its supply of points.

The Minister added that on the same date the meat ration will be increased by 2*d.* a week to 1*s.* 4*d.* The increase will be in carcass meat, so that the ration will then be 1*s.* 2*d.* of carcass meat and 2*d.* worth of canned meat. Meat supplies for manufacturing purposes, mainly sausages, will be increased by about 20% from Aug. 11.

Medical Expenses and Income-tax

During the committee stage of the Finance Bill in the House of Commons on June 25 Mr. A. J. CHAMPION moved a new clause providing for an allowance by way of deduction of income-tax in cases of illness arising out of a taxpayer's employment, trade, or vocation, and in respect of medical expenses incurred as a result of illness to the taxpayer or to his family. Such an allowance, he said, would afford a very welcome relief in times of exceptional difficulty.

Mr. GLENVIL HALL, financial secretary to the Treasury, thought it impossible to find a form of words which would meet disability and ill health of the kind to which Mr. Champion had referred. The new clause proposed would enable a man to take his whole family away to a sanatorium and charge the cost up as a medical expense against his income. Moreover, as the clause limited the relief to income under schedule D, it would exclude all those many employees who now paid income-tax under P.A.Y.E. The Government saw clearly the point which Mr. Champion was making, but they could not possibly accept this new clause.

Control of Penicillin

In the House of Commons on June 28 Mr. E. P. SMITH moved that the Control of Penicillin (No. 1) Order, 1946, dated May 21, 1946, be annulled. He said it made no mention of the unregistered practitioner who had been struck off the register for reasons unconnected with his medical skill and who would be debarred from using this invaluable drug. Also it permitted any Government department unconnected with public health to supply penicillin—a ridiculous state of affairs.

Mr. W. LEONARD, parliamentary secretary to the Ministry of Supply, said that £3 million had been spent on developing the production of penicillin, £2 million of it being Government money. It was not a universal cure and its indiscriminate use might be attended with grave consequences. With the new method of deep production now adopted production had risen from 3000 mega units a month in 1943 to about 300,000 mega units in June this year. Of this total about 120,000 units would be left for home consumption after the needs of the Services and the export trade had been met. Production was expected to increase fairly substantially over the next few months. The supply position did not justify uncontrolled distribution which might lead to a repetition of the experience of America where it was diverted to trivial uses. It was impossible to forecast the extent of civilian demand for penicillin until the commercial distribution had been in operation for some months. The Government thought that the present methods of distribution made the fullest possible provision for the treatment of all who might benefit from the administration of penicillin.

After further debate the motion to annul the Order was negatived by 145 votes to 45.

QUESTION TIME

Nationalisation of Hospitals

Major E. G. R. LLOYD asked the Minister of Health if he would give a list of the hospitals with which his department was at present negotiating for exemption from nationalisation. —Mr. A. BEVAN replied: I am not negotiating with any.

Manufacture of Hearing-aids

Mr. N. A. H. BOWER asked the Minister if he was aware that there are a number of firms with many years' experience in the manufacture and distribution of aural appliances whose products and methods of trading had been approved by the National Institute for the Deaf; and if he will use these firms in the production of the new aural aid.—Mr. BEVAN replied: The answer to the first part of the question is yes. The measures to be taken for the production of the Medical Research Council's hearing-aid are still under consideration.

Specialist Medical Officers

Mr. H. W. BOWDEN asked the Minister if he was aware that, through the failure of the Central Medical War Committee to call up specialist medical officers at a rate quick enough to replace those specialist medical officers in the Services who were due for release, it had been necessary to retard the release of these medical officers; and if he would speed up the call-up of those specialists who were eligible for service, in order that the serving medical officers might be released.—Mr. BEVAN replied: My department are in close touch with the Central Medical War Committee, who, I am satisfied, are making every effort to find replacements for specialists due for release.

Soap Supplies for Doctors and Dentists

Mr. L. D. GAMMANS asked the Minister of Food if he was aware of the hardship which would be caused to doctors and dentists by the cut in soap rations; and if he was prepared, on hygienic grounds, to make an additional allowance to them. —Dr. E. SUMMERSKILL replied: The special needs of doctors, dentists, and nurses have always been recognised; they have had a generous allowance as compared with other classes of the community. On this occasion, however, the Minister must apply the same proportionate cut as in the general ration, but this will still leave doctors, dentists, and nurses in a privileged position.

Russian Scientists' Visit to Britain

Major W. F. VERNON asked the Secretary of State for Foreign Affairs whether any arrangements were being made for inviting Soviet scientists to visit Britain in return for the visit which our scientists paid to Russia last year.—Mr. H. McNEIL: Yes, sir. The Soviet Academy of Sciences has accepted the invitation of the Royal Society to send a delegation to the Isaac Newton tercentenary celebrations in London this month. Cordial invitations have also been issued by the Physical Society to a Soviet physicist to deliver the Guthrie lecture, and to the Soviet Academy of Sciences to nominate a delegation to attend a conference in Cambridge in July.

". . . It is always assumed that the curious little spines that produce the roughness of the ordinary cat's tongue have been evolved for the purpose of scraping flesh from bone. Yet I think that everyone who has a cat will own that for every occasion on which they have witnessed the cat rasping flesh from a bone with its tongue they have seen it conduct its very deliberate and well-ordered toilet by means of licking either its paws, or its furry coat direct, many scores of times. It is here that I would introduce what I believe to be a general principle that is usually entirely overlooked in studies such as this. *It is the commonplace, oft repeated, though trivial function, rather than the dramatic, though only very occasional, action that is apt to influence structure and to be perpetuated in heritage.*" —Prof. F. WOOD JONES, F.R.S., speaking on the Mammalian Toilet at the British Institution, 1945.

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Medicine and the Law

The Herbalist's Manipulative Surgery

"Professor" Albert Lindley Payne, of Lindley House, Otley Road, Shipley, an unregistered practitioner, pleading "not guilty" to four summonses framed in various ways under section 40 of the Medical Act, was fined £1 on each summons but was not directed to pay any costs. Outside his premises there was a sign containing the words "manipulative surgery." He had signed certificates in which he added after his name the initials M.B.H.U. Whether or no these initials would have conveyed to anyone the impression that M.B. stood for bachelor of medicine, they in fact meant no more than that he was a Member of the British Herbalists' Union. A witness told the justices how she went to see the professor. She told him she was run down and suffered continually from colds. He examined her with a stethoscope and gave her some medicine. She said that the office where she worked was closed in and airless. He then gave her a certificate to produce to her employers. It was signed, according to the prosecution, "A. Lindley Payne" followed by the letters M.B. and others that were undecipherable. Another witness had visited the defendant. The witness had told him (as was true) that he had a duodenal ulcer. Having examined him with the stethoscope, Mr. Payne confirmed the fact and drew a sketch of the ulcer. He gave the patient some bottles of medicine and packets of powder, and, as the patient said he would like some lighter work, he gave him a certificate signed apparently with the same name and letters as before. For the defendant it was claimed that his character was blameless; he had practised as an unregistered practitioner for over twenty years. In cross-examination Mr. Payne said that he saw about 3000 patients a year, manipulated damaged bones and limbs, and exhibited a sign that he was a herbal practitioner. The sign was produced. A word, covered over, in front of the word "herbal," turned out to be "medical." Mr. Payne said he had covered this word up "some time ago." He agreed that he had not explained to his patient that the certificate he gave her was not a medical certificate. Witnesses were called on his behalf who said they never thought he was a registered medical practitioner.

The use of the words "manipulative surgery" seems to need judicial consideration. The words "manipulative surgeon" were carefully examined in 1936 in Jutson *v.* Barrow; any unregistered practitioner who calls himself a "manipulative surgeon" does so with the definite risk of prosecution. It is not easy to see why "manipulative surgery" should have any different effect. The facts in Jutson *v.* Barrow are worth recalling. Captain Barrow put up a plate bearing the words "Captain H. Barrow, M.M., Manipulative Surgeon"; he allowed himself to be described in the telephone directory as "manipulative surgeon," and he affixed to his motor-car a plate similar to the one displayed outside his premises. He was not registered under the Medical Act; he had never held any medical degree. When challenged at the instance of the Medical Defence Union, he wrote in reply that he was not using the title "surgeon"; "prove that I am not a manipulative surgeon, and I will remove the title 'manipulative surgeon' from my plate." Lord Hewart observed that section 40 of the Medical Act set out certain well-known descriptions such as "physician" and "surgeon," the use of which is forbidden to unregistered persons, and "goes on to sweep into the net of what is forbidden any name which has the effect of implying that the unregistered person is a registered practitioner." The words in the section "implying that he is registered" are, added Lord Hewart, words not purporting to describe the intent of the individual, but are words describing the effect of the name, title, or addition. "The section is to protect the public, and what is regarded is not the mind of the individual but the meaning likely to be conveyed by the words that are used." What Captain Barrow was asserting was "I am a surgeon and, if you ask me what kind of a surgeon I am, I am a manipulative surgeon." But, said the Lord Chief Justice, "if he desires to represent to the public that he is not a qualified surgeon, it is a very unfortunate thing that he should choose the description 'surgeon,' preceded though it be by the word 'manipulative' .... The thing which makes the name 'surgeon' appear to be attractive and useful is precisely the thing which this section was enacted to prevent. ... Speaking for myself, I cannot imagine any adjective which, being added to the title 'surgeon,' would excuse the use of the word 'surgeon' by a person not registered or recognised as a surgeon under the Act of 1858, unless, as for example in the case of a veterinary surgeon, he is expressly protected by statute." Mr. Justice Humphreys, following Lord Hewart, emphasised that the section contains no such words as "intent to deceive" or "intent to persuade persons that he is registered." The prohibition on the use of the protected words and titles, or of any other titles having the same implication, was absolute. Mr. Justice Singleton thought, by having a plate bearing the words "manipulative surgeon," Captain Barrow was using a description implying that he was recognised by law as a surgeon.

The upshot of those judicial views is that the blameless character and honourable intentions of an unregistered practitioner like Mr. Payne are not necessarily a defence to a summons under section 40. Meanwhile if members of the British Herbalists' Union are anxious to let the public know that they are not registered practitioners within the Medical Act, they might consider avoiding any possible confusion by refraining from the use of letters such as M.B., whatever the additions.

The proceedings against Mr. Payne were brought by the London and Counties Medical Protection Society which, with the other defence societies, has recommended to the General Medical Council "that addition be made to the present protected designations appearing in section 40 of the Medical Act to embrace abbreviations of recognised medical qualifications, the courtesy title of 'Dr.' when associated with the healing art, and any other description in common use that is accepted by the public and the profession as indicating that the user is a registered medical practitioner."

Fees and Bequest

A verdict of "suicide while not of sound mind" was recorded on June 25 at the St. Pancras inquest upon the death of the Hon. Leslie Gully, aged 48. There was evidence that death was due to an overdose of drugs supplied to her on the prescription of Mr. H. G. Bedford Russell. Mr. Russell gave evidence that the deceased suffered great pain from sinus trouble. He was questioned as to having received in the course of a year sums from her amounting to £10,000; it was stated that he would benefit to the extent of £25,000 under her will. The coroner observed that no criminal liability attached to Mr. Russell.

On the same day (June 25) a motion on behalf of the deceased's executor was mentioned in the Chancery Division. An action had been instituted to recover the sum of £10,000, and an injunction was applied for to prevent Mr. Russell from dealing with the sum involved. Sir Valentine Holmes, K.C., for Mr. Russell, intimated that the action would be defended; meanwhile his client would bring the sum claimed into court, but without any admission that he had received it as alleged or that he was under any obligation to return it. This disposed of the application for the injunction.

INFECTIOUS DISEASE IN ENGLAND AND WALES

WEEK ENDED JUNE 22

Notifications.—Smallpox, 0; scarlet fever, 941; whooping-cough, 2026; diphtheria, 274; paratyphoid, 1; typhoid, 4; measles (excluding rubella), 4516; pneumonia (primary or influenzal), 496; cerebrospinal fever, 51; poliomyelitis, 13; polio-encephalitis, 1; encephalitis lethargica, 2; dysentery, 93; puerperal pyrexia, 137; ophthalmia neonatorum, 57. No case of cholera or typhus was notified during the week.

Deaths.—In 126 great towns there were no deaths from enteric fever or scarlet fever, 4 (2) from measles, 4 (0) from whooping-cough, 2 (0) from diphtheria, 49 (5) from diarrhœa and enteritis under two years, and 7 (0) from influenza.

The number of stillbirths notified during the week was 261 (corresponding to a rate of 26 per thousand total births), including 38 in London.

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Letters to the Editor

PROPHYLACTIC PENICILLIN IN SURGERY

SIR,—Penicillin has been used to combat a wide variety of infections, but has so far been applied very little to prophylaxis. I have used it prophylactically in some 250 major operations. It was at first my custom to give the drug after the operation, but later I realised that better results could probably be obtained by giving the penicillin twenty-four hours before operation, so that the concentration in the blood would be at its height when the operation was in progress. The temperature charts showed a decided improvement when this course was adopted.

When penicillin was administered after operation, the temperature sometimes rose next day and might subside the following day or gradually subside to normal in two or three days. When penicillin was begun twenty-four hours before operation and continued for two or three days, a rise of temperature was the exception. The usual dose has been 20,000 units three-hourly. This is disturbing and disagreeable to most patients; but, when penicillin in wax is available for general use, this handicap will be removed.

Sepsis.—No case of wound sepsis has been encountered in a clean stitched wound. In wounds which have been drained sepsis has been minimal, and the comfort of the patient thereby enhanced. It is my practice when draining an abdomen to do so through a separate stab incision and to place a gutter drain in the wound itself down to the peritoneum. When penicillin is combined with this treatment, the gutter drain can be removed on the second day, and a healthy wound ensues. I believe that, if penicillin is used in all cases of peritonitis requiring drainage, spreading gangrene of the abdominal wall will fade into oblivion. The introduction of a tube into a wound for drainage entails sepsis. When the area exposed is large, as in genito-urinary, abdominoperineal, or breast operations, sepsis may be widespread and take many weeks to clear. Penicillin in such cases is invaluable; it enables the tube to be removed much sooner, with the certainty that no buried sepsis is left behind. Moreover such a wound is soundly healed, and hernia is avoided. Most incisional herniæ are the result of sepsis, and, if penicillin is used, they should in time disappear.

Thrombosis, phlebitis, and embolism are the outcome of infection. Since I have used penicillin, no case of this has been encountered. My numbers are too small to be dogmatic on this point, but in theory such complications should be impossible. If my hypothesis proves true, we should never again witness fatal postoperative embolism. In particular I have noticed the absence of a rise of temperature, from the fifth postoperative day onwards, due to a small embolus reaching the lung. Such cases were far more common in the past than was appreciated.[1]

Chest Complications.—The most dramatic change in postoperative convalescence is the rarity of chest complications. When postoperative penicillin was used, some patients were slightly chesty next day, but in every case such symptoms had disappeared by the following day. Since the introduction of preoperative penicillin no such case has arisen, and even a cough is exceptional.

Preoperative Infections.—In all cases of preoperative infection penicillin is strongly indicated. It not only adds to the safety of the operation and the comfort of the patient but also makes the operation simpler for the surgeon. Acute cholecystitis, in particular, subsides more rapidly, so that operation can be undertaken much earlier and with greater safety.

In the Aged.—Elderly patients do not take to their beds with impunity after accidents or operations. When they do, pulmonary congestion followed by heart-failure often terminates life. I have found penicillin most beneficial in operations on such patients for fractured femur, strangulated hernia, amputation of the leg, and acute retention of urine. Preoperative penicillin combined with early sitting out of bed has reduced mortality.

Ease of Recovery after Operation.—Since the introduction of preoperative penicillin the ease of recovery after major operations has been remarkable. This is a natural sequel to the absence of complications. The patients are bright, move about in bed earlier, sleep better, and regain their appetites much sooner.

Economy.—With complications reduced to a minimum, it is possible to get patients out of bed much sooner. After a clean stitched appendix operation the patient gets up on the second day and goes home on the fifth. After a hernia operation the patient gets up on the fourth day and returns home on the eighth. After a clean stitched abdominal operation (provided the general health is good) the patient gets up on the seventh day and returns home on the tenth. This is an enormous asset from the economic point of view of a hospital; it provides a rapid turnover of beds and minimises long waiting-lists for admission.

I have found preoperative penicillin of particular advantage in certain operations.

Bone Surgery.—I use penicillin prophylactically in all clean bone operations. This may sound cowardly, but no-one is immune from the odd case which goes septic, with tragic results. If one such case can be avoided, I think the labour well worth while.

Acute Osteomyelitis.—Sufficient has already been written of the beneficial results of penicillin in these cases. We have been astonished at its efficiency and the elimination of suffering and crippling.

Chronic Osteomyelitis.—I have found penicillin an enormous asset in the operative treatment of these cases. It is given for five days before operation, as it appears more difficult to eradicate the micro-organisms from bone than from soft tissue. The whole cavity is excised at the operation, and the wound dusted with sulphathiazole and penicillin powder and packed with soft-paraffin gauze. Penicillin is continued after operation, and on the third day the pack is removed and the wound sutured. In 2 recent cases primary healing took place.

Compound Fractures.—Penicillin has been used extensively in the treatment of these cases during the war, and the good results of secondary suture are too well known to be mentioned here.

Prostatectomy.—Penicillin combined with the Millin operation has revolutionised prostatic surgery. If the urine is infected on admission, it can usually be rendered sterile with penicillin very soon. If the urine is sterile, I give penicillin for forty-eight hours before, and continue it for five days after, operation. In my last three prostatectomies the wound healed by primary intention, and in no case did the temperature rise above normal during the whole stay in hospital.

Appendix Abscess.—In 3 recent cases of appendix abscess treated expectantly I have seen the most beneficial effects of penicillin, the mass in each case disappearing in four or five days. The third patient walked out of hospital perfectly fit on the tenth day.

From my experience in a short series of cases, I am convinced of the beneficial effects of prophylactic penicillin in all major operations. It can be life-saving, particularly in the aged, and the ease of convalescence, owing to the absence of complications, has to be seen to be appreciated.

Hereford. R. WOOD POWER.

1. Bauer, G. *Lancet*, March 30, 1946, p. 447.

SPONTANEOUS MESENTERIC VENOUS THROMBOSIS

SIR,—In your issue of April 13 (p. 534) Mr. d'Abreu, F.R.C.S., and Dr. Humble draw attention to the rarity of spontaneous mesenteric venous thrombosis and to the few records of survival after operation for it. The following case differs somewhat from theirs, in that operation was undertaken earlier in the course of the disease, that the patient recovered although special precautions against spread of the thrombosis were not taken, and that manifestations elsewhere of a tendency to venous thrombosis were not present.

A man of 43, invalided 2 years before from the R.A.F. for a duodenal ulcer confirmed by X rays, and now employed as a tobacconist, was admitted to Harefield E.M.S. Hospital at 8 P.M. on Dec. 6, 1945, with a 12-hour history of abdominal pain. The pain, sharp and stabbing though not colicky, had wakened him at 6 A.M.; it was situated in the right iliac fossa, and persisted 4–5 hours, subsiding spontaneously. At 4.30 P.M., and again at 6.30 P.M., he passed rectally a large amount of bright blood. The original pain did not recur, but at 11 P.M. he experienced a sharp pain in the left shoulder on turning in bed. Previous illnesses included acute osteomyelitis of left tibia in childhood, giving no further trouble, and symptoms suggesting duodenal ulcer in the last few years.

Seen at 10.30 P.M. on Dec. 6 he had a pulse-rate of 80, with normal temperature and respirations. No abnormalities were found in the cardiovascular or respiratory systems.

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Abdomen: no mass or distension, normal peristalsis, indefinite slight tenderness in the left iliac fossa, definite shifting dullness in the flanks. Rectally, tenderness in the rectovesical pouch.

At 12.30 A.M. the abdomen was opened and much blood-stained fluid was found in the peritoneal cavity. The large bowel was full of blood; and lying in the left iliac fossa on the pelvic brim was a coil of ileum, nearly 2 ft. long with its lower end 1 ft. from the ileocæcal valve, showing along its whole length the deep plum-colour of venous thrombosis. Mesenteric thrombosis was evident along the length of the infarcted segment extending to a maximum depth of 3 in. from the bowel margin. There was slight distension above and slight collapse below the affected loop which was resected from 6 in. above to 2 in. below the infarcted segment. A wedge of mesentery was removed and the bowel anastomosed end to end. The abdomen was closed without drainage.

Convalescence, assisted by a 48-hour course of nutrition by intravenous drip, was smooth. A transient hypertension (up to 154/100 m.m. Hg on Dec. 12) and azotæmia (blood-urea 87 mg. per 100 ml. on Dec. 10) caused no symptoms. He was discharged on Jan. 12, 1946, with no abdominal symptoms, and gaining weight. On June 6 he reported that his weight and appetite were back to normal and that he had no symptoms apart from one recurrence of his duodenal ulcer pain and occasional attacks of diarrhœa. He had returned to his normal mode of life.

The specimen showed venous thrombosis of the mesentery and bowel—apparently spontaneous, since there was no evidence of a causative volvulus, intussusception, or obstructing peritoneal band.

My thanks are due to Mr. David Levi for permission to record this case, to Dr. D. M. Pryce for the examination of the specimen, and to Mr. B. R. Billimoria for advice and assistance during the operation.

R.N. Hospital, Haslar, Hants. GEORGE BONNEY.

CULTURES IN FEMALE GONORRHŒA

SIR,—In their article of June 22 on gonorrhœa in the female, Mr. King and Dr. Gallagher suggest that "the general standards of culture of the gonococcus will probably not be high in this country until the commercial media available are brought to the pitch of efficiency reached by similar products in the United States and are more widely used."

Using heated blood-agar plates and incubating in air containing 8% carbon monoxide, the method advocated by J. W. McLeod, the following results were obtained in a series of 131 female cases of proven gonorrhœa seen in the venereal diseases department at the Leeds General Infirmary from January to June of this year:

Diagnosed—	*No. of cases*	*Per cent.*
By smear only	2 ..	1·5
By culture only	85 ..	65·0
By smears and cultures	44 ..	33·5

Thus the proportion of cases diagnosed by culture was 98·5%. The total number of cases treated for gonorrhœa during the same period was 165.

My thanks are due to Professor McLeod for permission to publish these figures.

General Infirmary, Leeds. BETTY WALKER.

C.CM. OR MILLILITRE?

SIR,—In your last issue Dr. J. M. Hamill reminds us that the volume of 1 c.cm. is not the same as 1 millilitre. He has not told us that the difference between them is very minute, something perhaps in the 4th or 5th place of decimals, but this is no reason why we should not be accurate in the use of the term. It is clearly correct for the biochemist to refer to ml. instead of c.cm. if his pipettes, burettes, &c., are graduated in ml., but the syringes in common use by clinicians are divided in c.cm. If a doctor injects, for example, 1 or more c.cm. of some substance, such as liver extract or adrenaline, into a patient, it is incorrect for him to state that he has injected so many ml., and yet in certain medical publications we find the term ml. automatically used instead of c.cm.

The indiscriminate use therefore of the term ml. is not scientific and will not be so until all measuring instruments used both in the laboratory and by clinicians are graduated in ml. and not in c.cm.

London, W.1. G. E. BEAUMONT.

MOTHER EARTH

SIR,—You are of course entitled to the opinions expressed in your leading article of June 15; but I feel I must ask whether it is fair to readers to mislead them by quotations out of context. I presume that you would agree that lime, phosphate, and nitrogen in their natural setting, within the living organism, present a different picture from the same lime, phosphate, and nitrogen in a test-tube or sack. It was not components but ecological relationships that I sought to stress in the article in *Mother Earth*. There is a whole field here awaiting research; that is why the Soil Association has been formed.

G. SCOTT WILLIAMSON.

Soil Association Ltd., 8F, Hyde Park Mansions, Marylebone Road, London, N.W.1.

UNWELCOME WORDS

SIR,—One does not expect beautiful English in a medical paper, but one can expect clear and concise writing. I was sorry to read in THE LANCET of June 1 that "all the rats were unilaterally nephrectomised" (p. 815) and "rats 1 and 4 of litter II were selected by randomisation" (p. 816). The writer seems to love long words for their own sake, perhaps, as Fowler says, confusing pomposity with dignity and bulk with force. The result is both longer and uglier than it might have been and is therefore unkind to the reader.

Chatham. F. A. RICHARDS.

On Active Service

AWARDS

M.B.E.

Captain V. P. BATRA, I.A.M.C.
Major H. M. S. G. BEADNELL, M.R.C.S., R.A.M.C.
Captain GEORGE BLAIR, M.B. St. And., R.A.M.C.
Captain K. P. BROWN, M.B. Lond., R.A.M.C.
Captain F. E. DE W. CAYLEY, M.R.C.S., R.A.M.C.
Captain B. M. R. CHOUDHURY, I.A.M.C.
Major A. B. COOK, M.B. Lond., R.A.M.C.
Captain A. H. R. COOMBES, M.R.C.S., R.A.M.C.
Captain H. E. DE WARDENER, M.B. Lond., R.A.M.C.
Major B. H. ELLIS, M.B. Lond., R.A.M.C.
Captain S. B. H. GARDEZI, M.B., I.M.S.
Major P. R. GRAVES, M.D. Lond., M.R.C.P., R.A.M.C.
Captain HAFIZ-UR-RAHMAN, M.B., I.M.S.
Major G. F. HARRISON, M.B. Lond., R.A.M.C.
Major A. C. KING, F.R.C.S., R.A.M.C.
Surgeon Lieutenant T. W. G. KINNEAR, M.B. Edin., S.A.N.R.(V.)
Captain P. M. KIRKWOOD, M.B. Edin., I.M.S.
Captain R. L. LANCASTER, M.B. Camb., R.A.M.C.
Captain J. C. MCNEILLY, M.B. Dubl., R.A.M.C.
Captain JACOB MARKOWITZ, M.B. Toronto, R.A.M.C.
Major N. S. MARTIN, M.D. Belf., R.A.M.C.
Captain K. C. MATHESON, M.B. Glasg., R.A.M.C.
Major WILSON MINNS, M.B. Durh., R.A.M.C.
Surgeon Lieutenant I. F. K. MUIR, M.B. Lond., R.N.V.R.
Major F. J. MURRAY, M.B. Belf., R.A.M.C.
Captain C. C. PETROVSKY, R.A.M.C.
Major SAPYA PRAKASH, M.B., I.M.S.
Captain T. S. PROTHEROE, M.R.C.S., R.A.M.C.
Major RAYMOND RAMSAY, M.R.C.S., R.A.M.C.
Major M. T. READ, M.C., M.R.C.S., R.A.M.C.
Captain M. F. RONAYNE, M.B. N.U.I., R.A.M.C.
Captain ALFRED ROY, M.B. Glasg., R.A.M.C.
Captain P. G. SEED, M.R.C.S., R.A.M.C.
Major J. McD. SIMPSON, M.D. Edin., R.A.M.C.
Captain BALWANT SINGH, L.M.S. Punjab, F.R.C.S.E., I.A.M.C.
Major S. D. SINGH, I.M.S.
Captain R. D. TAYLOR, M.B. Glasg., R.A.M.C.
Major S. F. THOMAS, M.B. Lond., I.A.M.C.
Major H. D. THOMPSON, M.B. Edin., R.A.M.C.
Major E. C. VARDY, M.D. Durh., R.A.M.C.
Major S. N. VARIAN, M.B. Dubl., F.R.C.S., R.A.M.C.
Major W. T. WALKER, M.B. Glasg., R.A.M.C.
Captain A. J. N. WARRACK, M.B. Lond., R.A.M.C.
Major D. B. WATSON, M.B. Aberd., R.A.M.C.
Major J. D. YOUNGHUSBAND, M.B. Camb., F.R.C.S.E., R.A.M.C.

MENTIONED IN DESPATCHES

Captain J. H. KEESEY, M.B. (posthumous award).

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Notes and News

THE HOSPITAL SITUATION

VIEWS OF THE KING'S FUND

AT the 49th annual meeting of the general council of King Edward's Hospital Fund for London, held last Monday, the SPEAKER of the House of Commons, who presided, said that many of those who for years have lived in and worked for the voluntary hospitals are afraid that with the National Health Service Bill much for which the voluntary hospitals have stood may disappear.

"Such anxiety is very general, but some will be relieved by the Minister's declared intention to preserve a measure of freedom and independence throughout the new organisation, and also by the provision that is being made for the hospital management committees to have free money which they can use for purposes outside the services provided by the State. . . . This 'free' money will be of great importance to the hospitals as it will prevent the strangling effect of having to rely on the State for the whole of their income with the rules and regulations that must govern such expenditure, while it will still be possible for the public to express in concrete form their good will and confidence in the hospital services."

The fact that after the appointed day the Minister will assume responsibility for the ordinary expenditure of the hospitals will, said the Speaker, set free a large proportion of the income of the King's Fund for purposes other than that to which it has been mainly devoted in the past: "the way will be open to the fund to use its resources to promote progress in all those many directions which will lie outside the immediate purview of a State hospital service."

Sir EDWARD PEACOCK, the treasurer, said that the income of the fund so far seems not have been affected by the proposals of the Bill. Excluding legacies, the general receipts in 1945 came to £324,095, as against £303,584 in the previous year. General legacies amounted to £140,615, compared with £50,419, and a further instalment of £75,000 was received from the Nuffield Trust for the Special Areas. The total receipts, therefore, amounted to £464,710 in 1945, compared with £354,003 in 1944—an increase of £110,707. Although the ordinary distribution was raised from £280,000 to £302,500 and provision was made for two special grants of £10,000 each, it was possible to transfer to reserve the sum of £117,264. He continued:

"There seems to be a growing impression that in view of the fact that current expenses of hospitals are to be provided by the State, need for help to voluntary hospitals will disappear with the passing of the Bill. But that is very far from the fact. Voluntary hospitals between now and the time when the Bill comes into effect 18 months or 2 years hence will suffer from financial difficulties greater than at any time for many years. This arises mainly from an unprecedented advance in expenses, partly because of the rising costs of all supplies, partly owing to new regulations regarding the nursing staff and higher salaries for domestic staff, and partly because of heavy reconditioning expenses."

After the Bill has come into effect, said Sir Edward, the fund will have a wider constituency, "because what were formerly the local-authority hospitals will be added to our list and we shall be free to foster those things which help to make the hospital a human, sympathetic place, rather than a merely efficient machine."

Sir ALFRED WEBB-JOHNSON, P.R.C.S., said that many had held the view that a change of ownership of hospitals was unnecessary in order to achieve an integrated hospital service for the nation.

"If Parliament decides otherwise, then we must bend our efforts to ensuring that under a State service we shall preserve the atmosphere and freedom in which so much has been done for the advancement of medical science. We must do our best to avoid the dangers that are inherent in a State monopoly of hospitals. We are fortunate in having a Minister of Health who, although he is convinced and is determined to carry through bold and revolutionary changes, is ready and anxious to discuss the dangers of such proceedings and how to avoid them. He realises that safeguards are necessary, and has undertaken to propose amendments on the report stage of the Bill which will give a greater measure of freedom to hospital management committees. We do not want to see local indifference with regard to hospitals because the responsibility lies at some distance with the regional board. Nor do we want to discourage right-thinking people from helping their fellows in distress when suffering from illness. Above all we do not want standardisation, as with standardisation we get a brake on progress. When Parliament decides on a national hospital policy, the fund will do all in its power to make that policy a success."

Reports on various activities of the fund were presented by Sir ERNEST ROCK CARLING (radium committee), Dr. MORLEY FLETCHER (nursing recruitment service), Sir HAROLD WERNHER (emergency bed service), Sir HUGH LETT (diet committee), and Mr. MALCOLM MCCORQUODALE (committee on domestic staff).

TRAINING SCHOOLS FOR ASSISTANT NURSES

THE Minister of Health, troubled by the lack of nurses, especially for the chronic sick, wishes to encourage the establishment of more training schools for assistant nurses. Authorities with suitable hospitals who have not yet applied to the General Nursing Council for approval are urged to consider founding schools. Possibly some hospitals which are otherwise suitable are having difficulty in finding a sister-tutor; the General Nursing Council has therefore consented to approve hospitals which employ—as temporary substitutes for sister-tutors—ward sisters who have taken a special four-weeks' course. A first course of the kind will be held at the Royal College of Nursing between July 1 and 27, and the syllabus will include the psychological approach to the assistant nurse, the effects of illness on behaviour, methods of teaching, the psychological approach to the types of patient whom assistant nurses will nurse, the history of nursing, occupational therapy, tuberculosis, infectious diseases and bacteriology, and the planning of the syllabus. The fee for the course will be 14 guineas, and the Minister thinks it will be proper for hospital authorities to meet the necessary expenses of sisters taking it. Further particulars of the course are to be had from the Director in the Educational Department, Royal College of Nursing, Henrietta Place, London, W.1.

HOUSING

Two new white-papers show that on May 31 the total number of new houses built in Great Britain was 42,018 (permanent 11,381, temporary 30,637) while 126,895 others were under construction (permanent 102,661, temporary 24,234). In addition, 81,413 permanent houses are projected but not yet begun. The total of houses of all types either built, building, or projected for Great Britain as a whole is thus 250,326 (compared with 214,100 at the end of April). This total does not include 3328 temporary huts completed, or the balance of 103,000 temporary houses projected. Between March 31, 1945, and May 31, 1946, accommodation has been provided—by construction of new houses and by repair of damaged unoccupied houses and by requisitioning and conversion of existing houses—for 171,643 families.

The total labour force employed rose during May from 500,100 to 515,200. Of these, 105,000 were working on permanent houses, and 38,500 on temporary houses. The number on war-damage repairs dropped from 175,000 to 167,000.

MINISTRY OF HEALTH

AN annotation on June 22 (p. 932) described some recent changes in the medical staff of the Ministry of Health, including the institution of a new rank of principal medical officer between those of deputy chief medical officer and senior medical officer. We should add that the rank of principal regional medical officer, which dates from 1939, has now been abolished, the holders becoming senior medical officers. The rank of deputy senior medical officer is likely to disappear when its present holders (three in number) assume higher rank or retire.

NURSING RECRUITMENT IN SCOTLAND

THE new Scottish Nursing Recruitment Service (see *Lancet*, Feb. 23, p. 282), sponsored by the Nuffield Trust, will operate through centres in charge of qualified and experienced staff. Girls leaving school, or older girls interested in nursing, will be given particulars of pre-nursing courses, conditions of service, and any other information they seek. Recruitment will be on behalf of the profession as a whole, and the centres will supply all Scottish hospitals. English girls who wish to train in Scotland will be given full particulars, and Scottish girls who want to train in England will be put in touch with

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the English nursing recruitment centres. A committee under the chairmanship of Sir Robert Nimmo, appointed by Lord Nuffield's trustees, includes Miss M. M. Edwards, of the London Nursing Recruitment Centre. Miss M. O. Robinson, chief nursing officer of the Department of Health for Scotland, will help the committee.

RELIEF IN HAY-FEVER

THE anti-histamine substance, β-dimethyl amino ethyl benzhydryl ether hydrochloride, issued by Parke, Davis and Co. under the name 'Benadryl,' is now obtainable in limited quantities in this country. Extensive trials in the United States (see *Lancet*, 1946, i, 425) showed that the drug was strikingly effective in relieving the symptoms of hay-fever and urticaria; it was less effective in asthma. The drug is a water-soluble powder given in capsules by mouth. Judging by animal experiments, its toxicity is low.

University of Oxford

On July 1 the honorary degree of D.SC. was conferred on Dr. J. B. Collip, F.R.S., professor of endocrinology at McGill University, Montreal.

Dr. R. H. S. Thompson has been reappointed dean of the medical school, and Dr. A. M. Cooke has been reappointed May fellow and reader in medicine, both for one year.

Salaries of professors.—The hebdomadal council, considering it expedient to increase the salaries of certain professors and university officials, has proposed a new schedule under which professors in general would receive £1600 a year. This figure applies to the chairs of pharmacology and pathology, to the Whitley chair of biochemistry, to Dr. Lee's chair of anatomy, and the Wayneflete chair of physiology. The regius chair of medicine commands, however, £2000 a year and the Nuffield professors of clinical medicine, surgery, obstetrics and gynæcology, and anæsthetics receive £2000, or £2500 if they do not retain fees accruing from attendance on patients in the hospitals associated with the Nuffield scheme. A special allowance of £100–£300 may be paid to professors in respect of their duties as heads of departments.

University of Cambridge

Dr. Charles Herbert Best, F.R.S., professor of physiology and director of the Banting-Best department of medical research in the University of Toronto, and Dr. Frank Macfarlane Burnet, F.R.S., director of the Walter and Eliza Hall Institute for Medical Research, Melbourne, were among five delegates to the Royal Society's Empire Scientific Conference on whom the honorary degree of doctor of science was conferred at a congregation on June 24.

University of London

On June 25 Prof. D. Hughes Parry was re-elected vice-chancellor for 1946–47, and Mr. D. R. Pye, SC.D., F.R.S., provost of University College, was appointed deputy vice-chancellor for the same period.

University of St. Andrews

The following have satisfied the examiners:

M.D. (with commendation for thesis).—H. A. Haxton and G. H. Smith.

M.D.—J. D. B. Macdougall.

M.B., Ch.B. (with commendation).—R. M. Allan, J. W. Black, D. A. McGreal, Marjorie S. Milln, Mary I. Milne, H. G. Morgan, Valerie N. Nairn, W. F. Ross, I. M. Stewart, and W. F. Walker.

M.B., Ch.B.—Joan E. Alexander, Maryan G. Anderson, Marjory W. Berwick, Doreen M. Bottone, Katerina Bramley, Jean F. Brown, Laetitia M. Bruce, D. W. K. Buchanan, Athene M. A. Cochrane, Joan E. Cozens, J. M. Dunbar, Margaret Duncan, R. M. Duncan, George Fyfe, Kathleen M. Graham, Anne E. Grant, W. G. Hood, Olive M. J. Johnston, M. A. Lambert, D. A. Lewtas, William Lothian, C. E. MacDonald, Hugh MacKenzie, Finlay McKerracher, J. N. MacLennan, H. S. McWalter, A. C. Millar, Anne D. Miller, Elsie Morison, Sheila M. P. Morphy, Rhoda G. Nicoll, Alison Oberlin-Harris, Elizabeth J. Page, T. J. Parkinson, D. A. Petrie, Sheila M. Ross, S. A. Smith, Sheila M. Tocher, J. C. Walker, Charlotte J. S. White, Stanley Whitfield, Clare E. Wildeboer, and Frances M. E. Wylde.

Royal College of Surgeons

A course of lectures on anatomy, applied physiology, and pathology will be held at the College, Lincoln's Inn Fields, London, W.C.2, from Sept. 2 to Oct. 18. There are to be two lectures daily at 3.45 P.M. and at 5 P.M. The fee for the whole course is 15 guineas, but fellows and members will be admitted without charge. Further particulars and cards of admission may be had from the secretary of the college.

Royal College of Obstetricians and Gynæcologists

Her Majesty the Queen has graciously accepted the office of patron of the college.

London County Council

Last September the Government decided to increase the standard salary of the heads of major departments from £3000 to £3500 (£3750 in the case of the Treasury). The general-purposes committee, recognising a general trend in the direction of higher salaries for the heads of departments, recommended to the council last Tuesday that the salaries of its senior officers should be raised. It proposed that the clerk of the council, who has special duties and responsibilities differentiating him from the other departmental heads, should receive £3750 a year, while £3500 should be paid to the comptroller, the chief engineer, the architect, the director of housing, the education officer, the solicitor and parliamentary officer, and the medical officer of health. Some of these salaries, including that of the M.O.H., will be reviewed when the present holder vacates his post. Special allowances will be made to other senior officers in the medical department.

Dr. R. M. Stewart, F.R.C.P., medical superintendent of Leavesden Hospital, Abbots Langley, is retiring on Aug. 21. The mental hospitals committee recalls that "in 1944 he was appointed as first holder of the office of medical adviser on mental health on the central staff of the public-health department," adding that "his long service has been characterised by a deep concern for the welfare of both patients and staff." Dr. G. Chaikin is also retiring. He has been a whole-time member of the staff of the L.C.C. since 1914, and a divisional medical officer in the public-health department since 1920, always in the school medical service; and "his unassuming manner, unfailing courtesy and helpful attitude to parents and children have earned him high esteem."

Appointments recommended include those of Dr. C. D. S. Agassiz as medical superintendent of Queen Mary's Hospital, Carshalton, and Dr. C. D. Coyle as medical superintendent of the Archway group of hospitals, Highgate, while Dr. G. C. Dorling and Dr. A. L. Jacobs are to be temporarily appointed surgical specialist and senior physician in this group. Mr. E. T. Bailey, also on a temporary basis, is to become a whole-time specialist for orthopædic and traumatic surgery.

Tuberculosis Association

At a meeting to be held at Oxford from July 18 to 20 the first discussion, on Thursday afternoon, will be on the Tuberculous in Industry; and on the same day at 5.15 P.M. Dr. William H. Feldman, of Rochester, Minn., will read a paper on Streptomycin in Experimental Tuberculosis. Next morning there will be a discussion on the Relationship between Primary and Adult Pulmonary Tuberculosis, and in the afternoon papers on Sarcoidosis will be read. The final discussion, on Saturday morning, will be on the Treatment of Tension Cavities. Guests at the meeting will include Dr. H. J. Ustvedt and Dr. Carl Semb (Oslo), Dr. André Bernou (Châteaubriant), Dr. W. Behrens (Zürich), and Dr. Feldman.

Central Council for Health Education

Dr. Norman C. Parfit, D.T.M., D.P.H., has been appointed deputy to the council's medical adviser and secretary, Dr. Robert Sutherland. His appointment will strengthen the team of whole-time headquarters lecturers available for lecturing to professional groups on the principles, content, and methods of health education. At the request of the ministry of health of Northern Ireland the council has established an area office in Belfast, and its work on behalf of government departments and local authorities will now include Northern Ireland as well as England and Wales.

Clinical Trial of Streptomycin

A committee of the U.S.A. National Research Council is supervising an investigation of the clinical uses and possible toxicity of streptomycin, particularly in infections which are resistant to sulphonamides and penicillin. The diseases chosen for study by selected hospitals and individual physicians are: infections of the genito-urinary tract with sulphonamide-resistant gram-negative bacilli; gram-negative bacillary infections with bacteræmia; *Hæmophilus influenzæ* infections; Friedländer's bacillus pneumonia; typhoid and paratyphoid; acute brucellosis with bacteræmia; tularæmia; and bacterial endocarditis due to gram-negative bacilli. A broader programme for the study of tuberculosis is planned, but present supplies will only allow the continuance of treatment in tuberculous cases already receiving streptomycin. All the streptomycin made is allocated by the Civilian Production Administration, without charge to patient or doctor. The committee of investigation is under the chairmanship of Dr. Charles S. Keefer, of Boston, with Dr. John S. Lockwood, of Yale, as secretary.

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Harvard Chair of Pediatrics

Dr. Charles Alderson Janeway has been appointed physician-in-chief at the Children's and Infants' Hospital, Boston, Mass., and succeeds to the Thomas Morgan Rotch chair of pediatrics at Harvard University, vacant since the death of Dr. Kenneth D. Blackfan in 1941.

Dr. Janeway, who is 37, belongs to one of America's most illustrious medical families. His grandfather was Prof. Edward Janeway, and his father, Theodore Janeway, who died from influenza in 1917 at the age of 45, had three years earlier become the first full-time professor of medicine in the English-speaking world when he was appointed to the chair at Johns Hopkins formerly held by Osler.

After graduating A.B. Yale in 1930 and M.D. Johns Hopkins in 1934, Dr. Janeway became in turn research fellow, demonstrator in bacteriology, instructor in medicine, and in 1942 assistant professor of pediatrics at Harvard. His many writings have been mostly on infectious diseases and immunology, and his recent work on plasma proteins has attracted attention widely.

Films in Microbiology and Protistology

The films made under the direction of Dr. Comandon by the Département de Cinémicrographie, Institut Pasteur, Garches, S. et O., will be brought to this country shortly. They include those reviewed recently in *The Lancet* (Jan 19, 1946, p. 111) and in the *British Medical Bulletin* (1946, **4**, 72); also films on *Amœba verrucosa*, karyokinesis, and lankesterella. They are silent films on 35 mm. stock with captions in French. A selection of these films will be shown in London by the British Council at 5 P.M. on Monday, July 15. Seats will be allotted in rotation on application to the council at 3, Hanover Street, London, W.1. (Tel. : Mayfair 8484, ext. 134.)

Rations for the Tuberculous

Last November the Minister of Health said in the House of Commons that tuberculosis patients were entitled to supplementary ration allowances. The Joint Tuberculosis Council has now obtained a statement to the effect that :

(1) Tuberculous patients in institutions are entitled to normal civilian rations and points goods.
(2) Tuberculosis institutions, along with other institutions, are entitled to priority supplies of goods such as dried eggs and jellies.
(3) Tuberculous patients are granted two pints of milk per day and 2 oz. of cooking fat per week instead of the normal civilian allowances of these foods. In addition, if the institution concerned possesses a deep fat frier, a special allowance of 2 oz. per head per week of frying fat can be obtained.

European Visitors Study Municipal Services

Some 40 administrators from the Continent are attending courses on local-government services arranged by the British Council in coöperation with the local authorities at Chester and Perth. The Chester programme includes lectures by Dr. J. W. Lobban and Dr. W. H. Grace, and visits to Chester Royal Infirmary, Chester Hospital, and Moston Military Hospital.

Medical Diary

JULY 7–13

Monday, 8th

ROYAL SOCIETY EMPIRE SCIENTIFIC CONFERENCE
10 A.M. (University College, Gower Street.) Final session.
2.30 P.M. (Royal Institution.) Dissemination of Scientific Information to the General Public.

MEDICAL SOCIETY OF LONDON, Cavendish Square, W.1
8.30 P.M. Dr. Simon Yudkin, Prof. John Beattie : Nutrition.

Tuesday, 9th

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East
5 P.M. Dr. P. M. D'Arcy Hart : The Search for Chemotherapeutic Agents in Human Tuberculosis during the Past 100 Years.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields
5 P.M. Prof. John Beattie : Physiology of Convalescence. (Second lecture.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
5.30 P.M. *Experimental Medicine and Therapeutics.* Annual general meeting. Dr. J. H. Humphrey and Dr. H. Joules : Penicillin Inhalation for Pulmonary Infection. Dr. F. Avery Jones and Dr. J. H. Humphrey : Management and Biochemical Studies in Severe Oliguria following Abortion.

LONDON SCHOOL OF DERMATOLOGY, 5, Lisle Street, W.C.2
5 P.M. Dr. R. T. Brain : Electrotherapeutics.

Wednesday, 10th

ROYAL COLLEGE OF SURGEONS OF ENGLAND
5 P.M. Dr. Peyton Rous : The Antecedents of Cancer. (Walker prize lecture.)

Thursday, 11th

ROYAL COLLEGE OF SURGEONS OF ENGLAND
5 P.M. Sir Frank Colyer : Dental Disease in Animals. (Charles Tomes lecture.)

LIVERPOOL MEDICAL INSTITUTION
4 P.M. Mr. George Perkins : Bone Grafting. (Hugh Owen Thomas memorial lecture.)

Friday, 12th

MENTAL HOSPITALS ASSOCIATION
11 A.M. (Guildhall, London.) Annual meeting.

Appointments

COLE, C. W. D., M.R.C.S. : asst. M.O.H. and school M.O., West Bromwich.
FERGUSON, WILLIAM, M.B. Aberd. : tuberculosis M.O., Derbyshire.
MACGREGOR, MURDOCH, M.D. Glasg. : M.O.H., Bethnal Green.
THOMAS, E. W., M.B. Glasg., F.R.C.S.E., F.R.F.P.S. : superintendent, West Park (County) General Hospital, Macclesfield.

*Queen Charlotte's Maternity Hospital, W.*6.—The following appointments are announced :—
CLAYTON, S. G., M.S. Lond., F.R.C.S., M.R.C.O.G. : obstetric surgeon.
EVANS, A. BRIANT, M.B. Camb., F.R.C.S., M.R.C.O.G. : obstetric surgeon.
FRANKLIN, A. W., M.B. Camb., F.R.C.P. : asst. pædiatrician.
HARE, RONALD, M.D. Lond. : director of pathology and research.
ROBINSON, KATHLEEN, M.D. Lond., F.R.C.S., M.R.C.O.G. : obstetric surgeon.

*Woolwich Memorial Hospital, S.E.*18.—The following appointments are announced :—
COOPER, D. M., M.B. Lond., F.R.C.S. : asst. surgeon.
GLEADOW, E. F., L.M.S.S.A., D.A. : anæsthetist.
LE VAY, DAVID, M.S. Lond., F.R.C.S. : orthopædic surgeon.
LOXTON, G. E., M.B. Camb., M.R.C.P. : asst. physician.
PEARSON, R. S. B., D.M. Oxfd, F.R.C.P. : asst. physician.
RAE, W. K., M.R.C.S., D.A. : anæsthetist.
SHUTTLEWORTH, C. W. T., L.R.C.P., L.D.S. : asst. dental surgeon.
TOWNSEND, C. G., M.B. Camb., D.A. : anæsthetist.
WALKER, F. O., M.R.C.S., D.O. : ophthalmic registrar.
WYMAN, J. B., M.R.C.S., D.A. : anæsthetist.

Middlesex County Council.—The following appointments are announced :—
BUTTERWORTH, BEATRICE A., M.R.C.P. : tuberculosis M.O., Finchley.
CLARK, A., M.D. Lond., M.R.C.P. : tuberculosis M.O., Ealing.
HEGGIE, J. F., M.B. Glasg. : pathologist, North Middlesex County Hospital, N.18.
JONES, I. D., M.B. Lond., D.A. : senior anæsthetist, Central Middlesex County Hospital.
LAIRD, ROBERT, CH.M. Glasg., F.R.C.S.E. : thoracic surgeon, Clare Hall County Hospital.
LORRIMAN, F. G., M.D. Durh., F.R.C.S.E., D.O.M.S. : ophthalmic surgeon, West Middlesex County Hospital.
MACDONALD, NORMAN, M.B. Edin., M.R.C.P.E. : tuberculosis M.O., Willesden.
MORTON, H. J. V., M.D. Camb., D.A. : senior anæsthetist, Hillingdon County Hospital.
SAKULA, JACK, M.D. Lond., M.R.C.P., D.C.H. : pædiatrician, Central Middlesex County Hospital.
SPENCE, A. C., M.R.C.S. : pathologist, West Middlesex County Hospital.
TOUSSAINT, C. H. C., M.R.C.S. : tuberculosis M.O., Tottenham.

Births, Marriages, and Deaths

BIRTHS

ALEXANDER.—On June 26, in London, the wife of Dr. R. S. Alexander—a son.
BRUCE.—On June 21, in Edinburgh, the wife of Dr. J. Alastair Bruce—a son.
BULL.—On June 30, in London, the wife of Dr. James Bull—a son.
CUTHBERT.—On June 27, in London, the wife of Dr. Olaf Cuthbert—a daughter.
DARBISHIRE.—On June 27, the wife of Dr. Stephen Darbishire, of Greenodd, Lancs—a son.
NEILL.—On June 23, at Bath, the wife of Dr. Gordon Neill—a son.
WRIGHT.—On June 26, in London, the wife of Major H. B. Wright, R.A.M.C.—a son.

MARRIAGES

CORBETT—SCOTT.—On June 25, in London, Anthony Ralph Corbett, M.R.C.S., to Elizabeth Margaret Moir Scott.
FLOYER—BURNS.—On June 8, Michael Antony Floyer, M.B., M.R.C.P., flight-lieutenant R.A.F.V.R., to Lily Louise Frances Burns.
GRANT—BAIRD.—On June 24, in Birmingham, Robert Neville Grant, M.R.C.S., to Audrey M. Baird.
KINMONTH—GODFREY.—On June 26, in London, John Bernand Kinmonth, F.R.C.S., squadron-leader R.A.F., to Kathleen Margaret Godfrey.
MCGREGOR—WHITHOUSE.—On June 22, in London, William Lindsay McGregor, M.B., to Aileen Janet Whithouse.

DEATHS

ADAMS.—On June 27, Annie Dorothy Mann Adams, B.M. Oxfd, late medical officer, R.A.F.V.R.
BAINES.—On June 28, at Whitby, Edward Baines, M.B. Camb., D.P.H., aged 80.
HENRY.—On June 24, at Debenham, Suffolk, Howard Henry, M.C., M.D. Dubl., aged 70.
JESSEL.—On June 23, at Eccles, Manchester, George Jessel, M.A., M.D. Oxfd, D.P.H., consultant tuberculosis officer, Lancashire County Council, aged 63.
MCKELLAR.—On June 24, in Newcastle, William Anderson McKellar, M.B. Glasg.
MANUK.—On July 1, Mack Walter Manuk, M.B. Edin., late I.M.S. and Colonial Medical Service (Northern Nigeria), aged 74.
WARD.—On June 24, at Parkstone, Espine Francis Ward, M.D. Belf., aged 65.
WHITMORE.—On June 26, Alfred Whitmore, M.D. Camb., lieut.-colonel I.M.S. of Madingley, Cambridge.
WILLIAMSON.—On June 27, at North Shields, James Burrell Williamson, M.B. Durh., formerly medical superintendent, Preston Hospital.

Major-General O. W. McSheehy, C.B., D.S.O., has been appointed colonel commandant of the Royal Army Medical Corps in succession to Major-General H. P. W. Barrow, who has reached the age-limit for this appointment.

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THE TUBERCULOSIS SERVICE AND THE FUTURE *

NORMAN TATTERSALL
M.D. Lond.

PRINCIPAL MEDICAL OFFICER, WELSH NATIONAL MEMORIAL ASSOCIATION

WHEN the tuberculosis service came into being some thirty-three years ago, those of us who entered this new branch of medicine had little idea of what lay ahead. Looking back we realise how slight was our knowledge of the disease process; we were still bound by the shackles of physical signs and could see little further than the length of our stethoscope. When I left Brompton I think I had never seen a chest X-ray film; or, if I had, it was such a bad one as to confirm the teaching of the day that radiology could do nothing to help one in tuberculosis. Marcus Paterson had recently wrought a minor revolution in the application of rest and exercise to the cure of the disease; we were firm believers in auto-inoculation and the opsonic index; we had no beds to speak of; and our armamentarium consisted of the stethoscope, a syringe, some dilutions of tuberculin, and great enthusiasm.

The first world war taught us many valuable lessons, and by the time it was over the radiographic era had already dawned. Probably the greatest achievement in these years has been the gradual building up of an organisation which has done more to guide and mould public opinion in the pursuit of positive health than any other public-health activity. Our work has never been solely confined to tuberculosis control; we have been a public-health agency primarily concerned with tuberculosis, but we have also taught the value of good health habits, proper nutrition, rest, and exercise. We have learnt and we have taught that we cannot limit our attention to tuberculosis and remain indifferent to other forms of chest disease or indeed to disease in any organ. We can claim a large share of the credit for the general health improvement of the last thirty years.

And now we have weathered another war, but this time we were not caught entirely unprepared. We have not marked time during this war, and we have demonstrated that war is not necessarily accompanied by an increased death-rate from tuberculosis.

SURGERY

It was a great day for the tuberculosis service when the surgeon took a place in our councils—and then proceeded to lay violent hands on the sacred precincts of the chest, the last stronghold of the physician. His advent gave a strongly practical turn to treatment; he learnt from us and we from him. He has introduced many operations, some of which have fallen by the wayside, while others have become our standard stock in trade. Above all he has introduced precision and has accelerated the trend away from empiricism and towards a basic scientific foundation in physiotherapy.

One result of the development of the tuberculosis service and its collaboration with the surgeon has been to give a tremendous impetus to thoracic surgery in general, a development which would not have reached its present stage without the facilities and wealth of material which have accrued from the stimulus given to the investigation of all forms of chest disease by our service.

We are on the eve of an immense scheme of reorganisation of the medical services in this country. During the war the establishment of surgical chest units became an urgent necessity, and many of these have, quite logically, been established at or in close touch with tuberculosis institutions. The operative technique and postoperative care are much the same for tuberculous and non-tuberculous conditions, and the results are most successful when carried out by a team in constant practice. It is inevitable, and right, that unity of need between tuberculous and non-tuberculous conditions should be recognised in the coming reorganisation; and in this respect, as in many others, the tuberculosis service has much to gain by a closer collaboration in the general field of medicine and surgery.

REGIONALISATION

Having mentioned the impending changes in the whole fabric of medical practice, I wish to say something about one aspect of this subject on which we can claim some knowledge and experience in Wales—I mean regionalisation.

Aiyar refers to the Welsh tuberculosis scheme as follows:

> "In 1912 the Welsh National Memorial Association was founded . . . a living example of the wisdom, imagination, and vision of its founder, the late Lord Davies of Llandinam and his co-workers. Here is an illustration of Wales as a region, with executive administration, and indeed it seems that Wales had forestalled all this recent talk of regionalisation before anyone even dreamt of such possibilities. That in itself is a great tribute to the people of Wales."

The *British Medical Journal* (Dec. 8, 1945) stated:

> "The unification of the Welsh counties in this admirable tuberculosis scheme shows how the needs of a whole area can be planned without disproportionate regard for the natural but inconvenient loyalties of local areas. The Welsh Tuberculosis Scheme is indeed a model which should be studied widely by English counties and county boroughs."

I can refer to these comments quite impersonally, as I had no share in the concept and design. It is indeed a memorial to Lord Davies and to its first principal medical officer, Marcus Paterson.

Under the new Government scheme planning of our hospital and consultant services will be on a regional basis. To this audience there is no need to labour the weakness of the existing tuberculosis service, which, as stated in the Joint Tuberculosis Council's reorganisation report, embodies 188 separate scheme-making authorities, each of which can frame its own interpretation of the words "make adequate arrangements" for dealing with tuberculosis in its own area. We all know the variation in standards of achievement which has resulted. Some schemes are as good as anything in the world; about some of the others the less said the better. As Gregory Kayne put it:

> "Each local authority must provide a . . . scheme which, given some sort of dispensary and institutional beds, conforms to the letter of the law; the extent to which the spirit of the law is applied is left to the conscience, and knowledge or ignorance on tuberculosis matters, of the local authority and its medical officer of health."

An expression often heard in Wales is "speak as you do find"; and, though I am only too well aware of certain failings and weaknesses of the Welsh scheme, I propose to "speak as I do find" of what, thanks to the vision of David Davies, regionalisation has meant to Wales. Here is a population of $2^1/_2$ million distributed throughout 13 counties and 4 county boroughs. Dense though the population is in some areas, for the most part the country is mountainous and sparsely populated. For tuberculosis administration the country is divided into 17 dispensary areas, each well equipped with central clinics and outlying visiting stations. No patient has far to go for radiography or a pneumothorax refill. John Jones who lives in a remote mountain farm has as good a chance as a resident of Cardiff of admission to

* Abstract of presidential address delivered to the Tuberculosis Association on Jan. 18, 1946.

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institutions which are second to none in the British Isles. Facilities for anything from radiography to a thoracoplasty are as easy for the one as the other. The boundaries of the areas are geographical rather than statutory; hence the patient can attend at the clinic which is easiest of access.

The 18 institutions vary in size from the small local hospital to the 400-bed sanatorium. Nearly every area tuberculosis officer has beds under his own control, and every general hospital in the country makes use of the services of the medical staff—not for tuberculosis only but also as consultants on chest disease in general. The medical staff of both area and institution meet periodically to discuss their clinical and administrative problems and work together as a friendly team. Although each officer has freedom to adapt his service to local peculiarities, the general level of achievement is controlled from the administrative centre in Cardiff.

The general fabric and equipment of the many institutions are surveyed and kept abreast of progress through a central maintenance department, and items such as sterilising dish-washers and Aga cookers are just as likely to be found in the smallest local hospital as in the largest sanatorium.

The organisation is large enough to have its own central research laboratory and is planning a considerable expansion of this department. Finally, the whole scheme is closely linked to the university through the chair of tuberculosis held by Prof. W. H. Tytler, who is also director of research. In the clinical teaching of students full use is made of the services of tuberculosis officers and medical superintendents as lecturers, and the students visit and are taught at our institutions, and some of them hold resident student-houseman posts in their final year.

Good as all this may seem, there are also grave defects:

(1) The service of tuberculosis health visitors, for instance, has been left in the hands of the local authorities, and one at once sees the variations in standard and performance which such a system implies; well done by some, by others it is hardly carried out at all, and for the most part the contact between tuberculosis officer and health visitor is poor. This is no argument against regionalisation but merely an example of what happens when regionalisation is not carried to its logical conclusion.

(2) The Public Health Acts place the responsibility for a great deal of preventive medicine on urban and rural district councils, many of which in Wales are so small in population and so poor financially that they cannot possibly afford the expenditure which would have to be incurred to carry out the duties properly. In many areas the salary of one health visitor would mean a 2*s.* rate.

(3) Aftercare remains in the hands of the county and county-borough councils and until recently has been more honoured in the breach than the observance.

(4) We have no colony, and rehabilitation measures are still in their infancy, but the development of such services should be much more easy of ultimate attainment under a regional than a local authority scheme. What sort of a service would Wales have had if instead of one there had been 17 different schemes all—as Kayne said—"left to the conscience and knowledge or ignorance on tuberculosis matters of the local authority and its Medical Officer of Health"?

The Welsh tuberculosis scheme is far from perfect, but it has attained a good standard of achievement over the whole area. What is good is largely the result of regionalisation, and what is lacking could be remedied by applying the same principle to the matters which are still left in the hands of the local authorities. If housing, health visiting, and notification could be organised in areas larger than those of the small local authorities, say on a county and county-borough basis, and at the same time strong central direction given as to the standards which must be achieved, most of our weak points would be eliminated.

The recent introduction through governmental action of mass radiography and treatment allowances indicate the value of central direction and leads me to some remarks on legislation in the control of tuberculosis.

THE LAW AND TUBERCULOSIS

In my reading of tuberculosis literature I have been struck with the varying attitude in different countries about the advisability of using compulsory measures, legally enacted, for the control of the chronic infectious case.

When I visited Chicago, in 1930, I was expecting to hear a lot about their legislation (I think it was called the Glackin Act), by which (so I had read) no sputum-positive patient was allowed to remain in home contact with any child for more than twenty-four hours after the case was discovered. Either the patient was removed to a sanatorium or the children were boarded out in safety. If the patient stayed at home, a placard was fixed in front of the house "Tuberculosis—Keep Out" and was supposed to remain there until three successive sputum tests showed the patient safe once more. How far this scheme worked we could not find out, but at that time Chicago was the mecca of racketeers, and it was suggested that for a price anyone could obtain the certificate of his non-infectiousness.

Banyai and Cadder have lately discussed the problem of tuberculosis carriers, legislation, and compulsory segregation in America, and it appears that many states and districts now use these methods on a considerable scale. Wisconsin, California, Connecticut, Columbia, Kansas, Minnesota, Missouri, New Jersey, and a few more appear to exercise legal powers freely to segregate their chronic infectious cases in special wards of sanatoria and even in specially adapted gaols. These authors consider that such segregation is a necessary complement to mass surveys and essential to the eradication of tuberculosis. Possibly public opinion in America is ripe for such action.

As pointed out by Ferguson, of Saskatchewan, as schemes for tuberculosis control gradually attain their objective, a stage is reached at which there are so few positive tuberculin reactors in the population that the problem of control has reached a fair degree of solution and the objective must be altered from control to eradication. At that stage segregation of the sputum-positive individual may become a highly effective measure of elimination.

In this country we have the necessary legal machinery to compel the isolation of the careless or dangerous person who will not accept the segregation which is offered, but this power has rarely been invoked. Most of us believe that such repressive measures would in the long run be a rod for our own backs by driving the problem underground, and that concealment would be even worse than the known danger. At the present moment when we do not possess the beds (if we have the beds we haven't the nurses) to treat the willing cases, it appears farcical to exercise such powers in any but the most exceptional case. I do not wish to minimise the risk which this mass of cases involves. In this country we have roughly 30,000 institutional beds for tuberculosis, and 70,000 *known* sputum-positive cases, apart from the 200,000 or so other cases on our registers. Thus there must always be some 40,000 known positive cases at large and possibly almost as many again who are unknown—and even more dangerous. Where are they? In their homes, in the streets, in buses, factories, schools—everywhere.

Here is an interesting example of the risks involved.

Some large-scale tuberculin surveys have recently been carried out in Wales, and the medical officer of health has collaborated with our mass-radiography

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unit in doing a combined tuberculin and radiographic survey of some 10,000 school-children in Merthyr. The results are not yet published, but I have Dr. T. H. Stephens's consent to quote this finding. In one school, standards 2, 3, and 4 contained 51 children, with an average age of about 9½ years; these 51 children yielded 6 positive reactors; but, in standard 1, among 26 *younger* children (average age 8 years), no less than 15 reactors were found. Inquiry elicited that the school teacher had had "bronchitis," had been away sick, had left the district, and was a patient in an English sanatorium.

We have no grounds for complacency when we contemplate these 40,000 (and it may well be 80,000) sources of infection in our midst, but the solution at the moment is not on the lines of the American legislation I have mentioned. Legislation must not get too far ahead of public opinion or it will fail.

In Sweden legislation has taken a more practical turn, and their "Law relating to dispensaries" of 1940 shows constructive thought. Their death-rate, in the latest figures I have seen (1938), was slightly higher than in this country but was falling rapidly. Their provided beds, on a population basis, are more than double our own. A main provision in their law is compulsory notification, which includes pleurisy, erythema nodosum, and phlyctenula. After notification (1) the tuberculosis officer *must* examine the home, and report on its hygiene; (2) *all* members of the home *must* be examined by tuberculin test, and all positives radiographed; and (3) any other contacts *must* attend for examination if the tuberculosis officer considers it necessary. The law also lays down in detail the measures to be taken for disinfection of homes, bedding, &c.

In this type of legislation we see that sense of central direction which has been so lacking in this country. Here we have 188 separate scheme-making authorities, each with executive powers, but they are left largely without central advice regarding what the Public Health Act of 1936 means by the phrase "adequate arrangements" for dealing with the problems of tuberculosis.

EARLY DIAGNOSIS

The late Sir Pendrill Varrier-Jones in 1940, criticising the tuberculosis service, compared it to an aeroplane without wings or rudder—he said "it is impressive so far as it goes, but it does not go far enough in either direction—it is all middle and no ends." The missing ends, he said, were "early cases" and "rehabilitation," and, so long as the first was missing and the second undeveloped, the whole scheme was rendered inadequate.

There was a great deal of truth in his criticism, but it is less true today than when he wrote it. It is still unhappily true that of the cases which reach our clinics mainly on symptomatic grounds there is a far too high percentage of advanced disease, but a close study of the figures given in annual reports shows a definite trend of improvement. In Wales, for instance, although the death-rate has fallen substantially during the war years, there has been a considerable increase in the new cases notified. But an analysis of the figures shows that the increase is entirely in the sputum-negative group, and that, although 750 more pulmonary cases were diagnosed in 1944 than in 1939, the total of sputum-positive cases fell by 200 and the sputum-negative group increased by 950.

This swing in favour of the sputum-negative diagnosis surely indicates a higher proportion of earlier cases. A material factor—probably *the* material factor—in this improved finding of the minimal case is the enormous increase in the number of individuals who pass annually through the sieve of radiography. The extent of this increase is not shown in anything like its actual volume by a mere study of the numbers who pass through the tuberculosis clinics, impressive though these figures are. The impact of the lessons learnt by our service has been felt by the general hospital, where the practice is steadily growing of taking a chest radiogram of almost every case admitted and of an increasing number of outpatients.

The Services too have taken up the theme with vigour both by miniature and large-film methods. To all this is added the half-million or so people who, even with our present limited scheme, may be expected to be examined annually by mass radiography. This half-million is only about 1% of the total population, but they are mainly chosen from the most vulnerable age-groups, and therefore it is a more searching screen than the bare numbers suggest.

As a rough guess then it seems probable that between 2 and 3 million people in this country are having chest radiography each year; and, as they are drawn either from the ailing, contacts to known cases, or from the most susceptible age-groups, the number of favourable cases discovered must rise. This huge volume of work is educating public opinion so rapidly that the man in the street is coming to know that a chest examination without a film is of comparatively little value, and he expects to be dealt with accordingly.

The percentage of cases found by the older and the newer methods are well known but will stand repetition:

> If we assume that the grouping of cases on admission to institutions is a fair index of the stage of their discovery, we find that in 1938 the average cases admitted to all sanatoria were minimal 13%, moderately advanced 32%, and far advanced 55%. On the other hand, the cases found by mass radiography of the presumed healthy are 62% minimal, 31% moderately advanced, and only 7% far advanced. And the experience of the Metropolitan Life Assurance Company in America has proved that, by the routine use of annual radiography and medical examination of their employees, the admissions to their own sanatorium achieve percentages almost identical with the mass-radiography findings: 59% minimal, 36% moderate, and only 5% advanced.

Here, then, is proof of what can be done and a clear road marked out for us to follow. We still have a long way to go, but the sting of Varrier-Jones's criticism about our failure to find the early case is being slowly but surely removed.

REHABILITATION

What about the other criticism—the other "missing end"—rehabilitation? Here again one must admit the truth of the criticism. There is no need to labour this point; all of us are aware of and fully admit that, with all our improving diagnosis and advances in treatment, our scheme breaks down badly at the point where the more or less restored individual has to be reintroduced to and maintained in the working conditions of everyday life.

A difficulty which I am sure many of us find when discussing rehabilitation problems with lay committees is that of proving the special case of the tuberculous—that tuberculosis has features distinct from most other chronic disease—and that methods which are easy of application, say, to the war wounded and crippled cannot meet the needs of the tuberculous. In a recent memorandum on financial assistance for the tuberculous, Dr. C. K. Cullen sums up the special position of tuberculosis as follows:

> "The chronicity and duration of the disease are by no means the only factors. . . . The long-continued infectivity, family susceptibility, the need for high standards of nutrition, housing accommodation, environment, and recreation facilities, the relationship of anxiety and other psychological reactions to the progress of the patient and the peculiar difficulties of rehabilitation—are all factors which must be taken into account. . . . It is doubtful whether any other disease creates a comparable financial and social need for the family concerned."

I have already referred to the increasing assumption of Governmental responsibility in the tuberculosis

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campaign, and in the last three or four years several official schemes have been put forward which have not yet been fully developed but show the trend of official responsibility and action, and in the Disabled Persons Act we have an instrument with enormous potentialities.

The recent official schemes fall under two headings: (1) the provision of educational courses for patients while undergoing institutional treatment; and (2) the training, rehabilitation, and resettlement in industry of the tuberculous patient.

On the educational side there was the Ministry of Health circular 5/45 of a year ago dealing with the provision of educational courses for civilian patients likely to be detained in hospitals for long. The circular places the onus for such provision on the local authority through its chief educational officer, and the only responsibility on the medical superintendent is that of establishing contact between the patient and the educational authority. So far as my knowledge goes, and certainly in Wales, this scheme is in a state of suspended animation. The provisions of the new Education Act appear to have thrown such a strain on the resources of the local authorities that their part of this proposal has not been attempted. Certainly there are great difficulties—I can quote for instance the attitude of the local education authority in one Welsh county in which is situated an institution drawing patients from all over the principality, with a very small minority of their own ratepayers. Why should they, it is argued, shoulder this expense of providing educational courses for patients normally resident outside their area?

It may be that this scheme will never bear much fruit, but its importance is the official recognition of a need, even if this first attempt to meet it should fail. In America the provision of educational courses is being widely developed, and in the Montefiore Hospital in New York some 40–45% of patients are engaged in formal educational courses. The idea was well summarised by Helen Becht in 1944:

> "Not every hospital can have on its staff educators who are prepared to attack every level of learning which the patient-group may need, but every hospital should have, somewhere in its personnel, a person who will have sufficient interest in patients as people, sufficient awareness of the vast range of individual differences among them, and sufficient knowledge of the facilities which the community provides, to make some connexion with the extramedical needs of patients and the opportunities which are available to meet those needs. . . . In every hospital an educational programme *can* be inaugurated . . . but it will fail in its purpose unless it be founded on full coöperation and approval with the medical policy of the institution. . . . In the hospital, activity can be started which has a meaning . . . *there* can be born the desire and fact of being busy at something which is not confined to the lives of those who are ill . . . and which weans them from the insecurities which illness breeds."
>
> "Librarians, occupational therapists, social workers, nurses, teachers . . . are all educators . . . but to have full value the work of all must be . . . properly integrated . . . and all with medical supervision."

RESETTLEMENT

So much for education—what about the more direct settlement into industry? The first step in this direction was the Ministry of Labour's Interim Scheme for the Training and Resettlement of Disabled Persons, under which ex-Service and civilian patients can be trained in various occupations at special centres set up by the Ministry of Labour. This scheme has worked fairly well for those patients who were getting on top of their disease; and, while war conditions of labour prevailed, it enabled a considerable number of patients to learn jobs and hold them at good wages. Now, in the piping days of peace, their problem will be less easy. The light repetition job ceases, and they drift, often without advice, to the heavier job, which proves too much for them.

Under the Disabled Persons (Employment) Act, 1944, a much more hopeful and wider scheme for training and rehabilitation has opened out. It has been expressly stated that the provisions of the Act and the definition of a "disabled person" apply fully to tuberculous patients.

Under this Act all disabled persons are invited to register with the labour exchange, and the benefits of the Act will only apply to those who do so. At every local office of the Ministry of Labour there is a disablement rehabilitation officer (D.R.O.), whose special duty is to advise disabled men and women and to help them to find suitable employment. The D.R.O. is in touch with all hospitals in his area and visits the patients; the closest liaison is to be maintained between the D.R.O., the medical superintendents of institutions, and tuberculosis officers, so that the placing of a patient in employment may be definitely suited to his mental and physical capacity.

Every employer with twenty or more workers must employ a certain quota of registered disabled persons. The Act also gives the Minister power to designate "certain classes of employment for the special benefit of disabled persons who are registered." This provision may be of great service to the tuberculous by allocating a higher proportion of registered tuberculous patients to certain industries in which the conditions of work are particularly suited to their condition. Although it is the policy of the Ministry to place disabled persons in open employment whenever possible, section 15 of the Act empowers the Minister to provide facilities for employment or work under *special conditions* for the severely disabled who are unlikely to be able otherwise to obtain employment. These facilities may be provided directly by the Ministry or indirectly by local authorities or voluntary associations. This provision opens up the possibility of great development in the matter of sheltered employment for the tuberculous in special workshops, and any such development would be sponsored by the corporation set up under section 15 of the Act. The facilities under this section have been interpreted to extend to residential accommodation, such as hostels, village settlements, &c., and therefore the provisions of this section of the Act may be of great service towards the setting up and financing of tuberculosis colonies, village settlements, &c.

The above description of the facilities now becoming available indicates that every type of individual who has any possibility of return to work, and even many in whom that possibility is unlikely, can be helped to obtain education, training, or work by one or other of these schemes. During the war years, when there has been work for all, the machinery of the Ministry of Labour has on the whole worked well; but, as the demand for labour becomes less acute, and with the widened opportunities for the employment of the more or less disabled individual, the question arises whether the machine will work with the same degree of smoothness. Will the D.R.O. really have the breadth of outlook and capacity to appreciate the problems of the tuberculous?

The risk of relapse in tuberculosis is ever present and needs the closest supervision and most careful handling. The D.R.O. is a new kind of specialist in social welfare, and experiment will be needed to decide what qualities, experience, and training are required for such posts. Although the close coöperation of medical superintendents and tuberculosis officers is assured, doctors usually have insufficient knowledge of industry to be able to give a direct lead regarding a patient's ability to perform a specific type of work. On the other hand, industrialists know even less about the requirements of health than doctors know of the requirements of labour.

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I believe that in the Disabled Persons Act we have been given a power which, if wisely used, can revolutionise the outlook for the patient leaving a sanatorium. The scheme will have to be closely wedded to the sanatorium workshop or other form of light industry in which trial of a patient's fitness can be made; but gradually there should evolve an understanding of the needs of the tuberculous patient which will banish that fear which is such a big deterrent in their cure—not fear of the disease but fear of becoming sufficiently well to be sent out into the world to try to do jobs which they know are beyond them. Here, in the special industry, the sheltered workshop, or even in full competitive work, is the opportunity to restore independence, to return a man's earning capacity and make him a taxpayer—to silence once and for all the taunt that all we can do is to turn sick workers into healthy loafers. Here is a sincere effort to build that other "missing end" to which Varrier-Jones devoted so many years of work and thought.

VARIATIONS IN REPRODUCTIVE PATTERN
ACCORDING TO SOCIAL CLASS *

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BRITAIN, in common with many countries in Western Europe, North America, Australia, and New Zealand, finds itself faced soon with a total fall in the population which can only be checked by an increase of fertility. The statistics bearing on this problem in England and Wales were well set out by Titmuss (1945), and most of the national statistics quoted here have been obtained from his paper.

During the last ninety years the population of England and Wales has risen steadily (table I). To begin with, this was associated with a very high birth-rate, but since 1891 the birth-rate has been falling, and the continued increase in the population has been due more to the falling death-rate. Since 1891—i.e., in the last fifty years—the number of women in the reproductive age-group has risen by three million, and the number of married women aged between fifteen and forty-five has grown by two million. Despite this, the number of live births each year is lower by 309,000.

TABLE I—STATISTICS OF MARRIAGES AND BIRTHS PER POPULATION, 1851–1938

Year	Total population	Women aged 15–45	Married women aged 15–45	Annual live births	Average for
1851	17,928,000	4,235,000	2,004,000 (*47*)	647,000	1851–1860
1861	20,066,000	4,721,000	2,320,000 (*49*)	750,000	1861–1870
1871	22,712,000	5,240,000	2,601,000 (*50*)	859,000	1871–1880
1881	25,974,000	5,990,000	2,943,000 (*49*)	889,000	1881–1890
1891	29,003,000	6,891,000	3,244,000 (*47*)	916,000	1891–1900
1901	32,528,000	8,121,000	3,804,000 (*47*)	930,000	1901–1910
1911	36,070,000	8,990,000	4,288,000 (*48*)	810,000	1911–1920
1921	37,887,000	9,468,000	4,596,000 (*49*)	713,000	1921–1930
1931	39,952,000	9,825,000	4,918,000 (*50*)	607,000	1931–1938
1938	41,215,000 (estimated)	9,954,000	5,396,000 (*54*)	..	..

In the tables italicised figures in parentheses represent percentages.

The population is naturally affected more by a fall in the death-rate in the young age-groups than among old people, and it is just in these young groups that the mortality has decreased most. Table II shows a very striking fall in the infant mortality from 150 to 50 in forty years and a much smaller fall in the general mortality-rate. There has also been a considerable fall in the birth-rate.

CALCULATION OF FERTILITY

The crude birth-rate does not give an accurate idea of fertility, however, since the composition of the population has to be considered. To calculate fertility we must know the number of women aged between fourteen and forty-five and the amount of marriage. These numbers are constantly changing and are affected by many factors, but it is possible to calculate the average number of girl babies, potential mothers, born to a woman throughout the child-bearing age. This is called the gross reproduction-rate. Some of these girls do not survive to maturity; and, if allowance is made for this, we get the net reproduction-rate. A net reproduction-rate of 1 means that if birth-rates and death-rates remain constant in each generation, one mother will be replaced by another and the population will remain constant. In 1881 this rate was 1·5, and in 1933 it was 0·74 (Scotland 0·9). The net reproduction-rate in that year, therefore, in England and Wales was 25% below replacement and would have led by now to a fall in the total population but for the great fall in the death-rates and the large number of women reaching the very fertile age-period from twenty to thirty-five years, during the last fifteen years, resulting from previously high birth-rates. Since 1931 the number of married women under forty years of age has risen by 20%, and in the period 1939–42 there was a record number of marriages. During the last ten years there have been approximately 500,000 additional early marriages. This has depleted our marriageable stocks and has had a relatively small effect on the crude birth-rate. In 1941 the birth-rate touched bottom at 14·2, in 1942 it was 15·8, and in 1943 16·5. Before the war of 1914–18 the birth-rate was 24, and by the end of that war it had fallen to 17·7. In 1942, despite the advantages of nearly 1,000,000 more potential mothers, there were fewer births than in the worst year of the last war. The hitherto low record level of 17·7 in 1918 rose to 25·5 in 1920. From this peak it steadily declined.

TABLE II—MORTALITY-RATES, 1841–1939

Year	Deaths of infants under 1 year per 1000 live births	Standardised death-rate per 1000 living	Live births per 1000 population of all ages
1841–1845	148	20·6	32·3
1846–1850	157	22·4	32·8
1851–1855	156	21·7	33·9
1856–1860	152	20·7	34·4
1861–1865	151	21·4	35·1
1866–1870	157	21·2	35·3
1871–1875	153	20·9	35·5
1876–1880	145	19·8	35·3
1881–1885	139	18·7	33·5
1886–1890	145	18·5	31·4
1891–1895	151	18·5	30·5
1896–1900	156	17·6	29·3
1901–1905	138	16·0	28·2
1906–1910	117	14·4	26·3
1911–1915	110	13·7	23·6
1916–1920	90	13·4	20·1
1921–1925	76	10·9	19·9
1926–1930	68	10·3	16·7
1931–1935	62	9·6	15·0
1936 ..	59	9·2	14·8
1937 ..	58	9·2	14·9
1938 ..	53	8·5	15·1
1939 ..	50	8·5	14·9

It was thought that after the last war a change in reproductive trend had started. Some say that this war has led to similar changes in reproductive habits, but there is less justification for this view. Early marriage and the early birth of a first child does not mean that families will be larger. There is no doubt that, unless there is a big change in outlook and an increase in the size of individual families, we shall soon have a decline in the total population, a great decrease in the number of young people, and an increase in the

* A lecture delivered to the Royal Medical Society of Edinburgh, Jan. 25, 1946.

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number of old people. If the decline is allowed to develop it will soon become rapid. Before effective legislation can be introduced to alter the downward trend, more information is needed about the reproductive habits of the population. At the moment we have little knowledge of the size of families, and we do not know the incidence of childless marriage. The Royal Commission on Population therefore recommended that a family census should be taken of a representative sample of the population. There is no doubt that great differences exist between the social classes.

TABLE III—AGE-DISTRIBUTION AT TIME OF MARRIAGE OF WOMEN IN GROUPS 1 AND 2

Group	Age-group (years)						Total no. of women
	Under 20	20–24	25–29	30–34	35–39	40 +	
1*	234 (27·7)	392 (46·4)	162 (19·2)	39 (4·6)	18 (2·1)	..	845
2*	3 (0·9)	100 (31·8)	124 (39·5)	61 (19·4)	18 (6·7)	5 (1·6)	311

* Number of women

PRESENT INVESTIGATION

The following is a study of two groups: group 1, corresponding more or less to the Registrar-General's social classes III, IV, and V, consists of married women who booked for confinement in hospital; group 2 corresponds to social classes I and II, booked to be confined in a nursing-home. In group 1, 41% were primiparæ and 8·3% had already had more than five children. In a group of 2100 women of the same social class delivered under the domiciliary scheme only 19·2% were primiparæ, 18·4% had had more than five children, and 4·8% had already had nine or more children. Combining these two groups in their proper proportions we find that 11·6% had had more than five children. In group 2, 66% were primiparæ and none had had more than five children. In this area no woman in this social class was confined at home.

Great differences in the reproductive habits were found. First, the *illegitimate birth-rate* in the area is about 8%, and practically all these births occur in the same social group as group 1. Table III shows the difference in *age at the time of marriage*. In group 1, 27·7% married before the age of twenty, whereas in group 2, only 0·9% were married before twenty; 74·1% in group 1 and 32·7% in group 2 were married before the age of twenty-five.

In group 1 *prenuptial conception* took place in 29·8% of the total. In women under twenty at the time of marriage it took place in 39·7% of cases (table IV). In group 2 there were no examples of prenuptial conception.

TABLE IV—DISTRIBUTION OF PRENUPTIAL CONCEPTION IN GROUP 1 AND ANALYSIS OF POSTMARITAL CONCEPTIONS

—	Age-group at marriage (years)				
	Under 20	20–24	25–29	30 +	Total
Prenuptial conceptions	93 (39·7)	114 (29·1)	33 (20·3)	11 (23·9)	251 (29·8)
INTERVAL BETWEEN MARRIAGE AND FIRST CHILD					
Less than 1 year ..	54 (38·3)	96 (34·5)	28 (21·7)	15 (32·6)	193 (32·4)
Less than 2 years ..	52 (36·8)	92 (33·1)	47 (36·3)	14 (30·4)	205 (34·5)
Less than 3 years ..	16 (11·3)	40 (14·3)	18 (13·9)	5 (10·8)	79 (13·3)
Less than 4 years ..	9 (6·3)	22 (7·8)	10 (7·7)	3 (6·5)	44 (7·4)
More than 4 years ..	10 (7·1)	28 (10·1)	26 (20·1)	9 (19·1)	73 (12·2)
Total ..	141	278	129	46	594

In group 1, where conception took place after marriage, it was found that the younger the patient at the time of marriage the sooner she became pregnant (table IV). The percentage of the total in each age-group having a child within a year of marriage decreases till the age of thirty; over that age 32% had a child within a year of marriage, possibly because there was then less economic reason for delaying conception. On the other hand, 19·1% of those over thirty years of age did not have a child till more than four years after marriage, compared with 7·1% in the age-group under twenty, possibly indicating diminished fertility in the older women. When groups 1 and 2 are compared, we find no significant difference in the length of time between marriage and the birth of the first child in the age-groups from twenty to twenty-four and from twenty-five to twenty-nine (table V).

TABLE V—AGE AT MARRIAGE AND INTERVAL BETWEEN MARRIAGE AND BIRTH OF FIRST CHILD IN GROUP 2

—	Age-group (years)				Total
	Under 20	20–24	25–29	30 +	
INTERVAL BETWEEN MARRIAGE AND FIRST CHILD					
Less than 1 year	..	34 (34·0)	24 (19·3)	15 (17·8)	73 (23·4)
Less than 2 years	1	37 (37·0)	48 (38·7)	32 (38·0)	118 (37·9)
Less than 3 years	1	11 (11·0)	16 (12·9)	16 (19·0)	44 (14·1)
Less than 4 years	..	7 (7·0)	14 (11·3)	9 (10·7)	30 (9·6)
More than 4 years	1	11 (11·0)	22 (17·7)	12 (14·2)	46 (14·8)
Total ..	3	100	124	84	311

With regard to subsequent pregnancies, the younger the patient at the time of marriage and the shorter the interval before the first birth, the greater the number of subsequent children. For example, in group 1 (see table VI), among those not pregnant before marriage but having a child within a year of marriage (*b*), 43% had had subsequent children at the time of inquiry. In the age-group under twenty the average number of subsequent children was 3·6, and in the age-group from twenty to twenty-four it was 2·03. When the first child was born more than a year after marriage (*c*), 31% had subsequent children, and the average number of subsequent children was 1·86 in the youngest age-group and 1·3 in the age-group from twenty to twenty-four. In the prenuptial-conception subgroup (*a*) 74% had subsequent children, and in the youngest age-group the average number was 3·5, and in the age-group from twenty to twenty-four 2·5. In both (*a*) and (*b*), of the women who marry before the age of twenty and have further children beyond the first, 27% have more than five children; whereas, when marriage takes place in the age-group from twenty to twenty-four only 11·5% of those having subsequent children in group (*a*) have more than five children; in subgroup (*b*) the percentage is very small.

In group 2, table VII shows that, no matter at what age marriage takes place or what the interval between marriage and the birth of the first child, the average number of subsequent children in no instance reached 2. Actually only 6 out of 78 women having subsequent children have 3 other children at the time of observation.

It has been calculated that, to keep the net reproduction-rate about unity, each married woman who is able would require to have 3 or 4 children. At the time of observation the 845 women in group 1 had an average of 2·06 children each; in group 2, 311 women had an average of 1·4 children. In group 1 this was made up of 393 women (46% of the total) having 2·3 subsequent children after the first. In group 2, 91 women (29% of the total) had 1·35 subsequent children.

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LARGE FAMILIES

In group 1, as has been shown, there was great inequality in the distribution of the children, and only those who were pregnant before marriage or who married before the age of twenty had large families. The hospital figures underestimate the incidence of large families among the poor, since many multiparæ are reluctant to come into hospital for confinement and leave the other children; hence a large proportion are delivered under the domiciliary scheme. As mentioned earlier, out of 2100 domiciliary cases 18·4% had more than five children and 5% had nine or more children. From the hospital experience we know that these large families are found where the mothers marry young and often after they are already pregnant. It is therefore evident that, if experience in this survey is typical of that of other cities in Scotland, the larger numbers of children found among the poor are not achieved by even distribution, and where large families are found they are not planned. Even the first pregnancy is not planned, and there is little attempt to secure a home until pregnancy has occurred. In these circumstances the wastage of infant life is high, and the health and physique of those who survive are poor. In group 1 of this series the still-birth-rate in a ninth pregnancy was more than twice that of a first pregnancy, and three and a half times that of a second pregnancy. According to Burns (1942), out of 1000 children born alive in county Durham in 1939 the figures for those dying between birth and five years of age were for firsts 85, seconds 93, thirds 99, and for seventh and later children 174. The rates between the end of the first month and five years of age are for first, second, third, and seventh children 50, 62, 70, and 90 respectively.

Yudkin (1944) demonstrated in Cambridge that children from small families were bigger and heavier and had a higher hæmoglobin level and a stronger grip than children from larger families, these differences being greater in the children from poorer areas. The net reproduction-rate in Scotland is not quite unity, even with this large contribution from the poorer sections of the community. In England and Wales the net reproduction-rate is much lower than in Scotland, possibly owing to the fact that there are relatively fewer slums and therefore fewer families living in circumstances where the planning of a family is difficult or impossible. Glass (1938) showed that in 1931 in Durham and Monmouthshire the gross reproduction-rates were 1·275 and 1·140 respectively and the infant mortality-rates high, whereas in Surrey and London the gross reproduction-rates were 0·767 and 0·787 respectively and the infant mortality low.

That large families among the poor are not desired can be confirmed by asking women who have had about 10 children how many they would like if they had had the choice. Usually the answer is about 3 or 4. This corresponds to the estimate of the well-to-do mother where the family is carefully planned and where 2 children are all that are usually thought expedient, provided they are of opposite sexes, though many express the opinion that their ideal family would be 3 or 4.

In Britain we have failed so far to raise the net reproduction-rate to unity and at the same time maintain good standards of health. In the areas or social classes where the health statistics are fairly good the reproduction-rate is much less than 1, and in the areas or social classes where the reproduction-rate is 1 or near it, the mortality figures are high and the general standard of health is poor. It is possible to have a net reproduction-rate above unity and a healthy population, as has been demonstrated in New Zealand and in Holland before 1939. Information is not available about the size of families in these countries, though it is known that health services are of a very high order, and they have very low infant mortality-rates. The high mortality-rates in Scotland are kept up to some extent by the high death-rates among these large families. It has been shown that the large families are found almost entirely among the women who seem incapable of planning their lives. These families include many of the problem group and are the last to take advantage of the educational and public-health facilities available. They show very little initiative and are difficult to influence. Improvements in housing, education, and child welfare, with improved provision for birth-control in this group, will lead to a further fall in the birth-rate and an improve-

TABLE VI—RELATIONSHIP IN GROUP 1 BETWEEN AGE AT MARRIAGE, INTERVAL BEFORE BIRTH OF FIRST CHILD, AND SUBSEQUENT NUMBER OF CHILDREN

Subgroup	Age-group at marriage (years)					Total
	Under 20	20–24	25–29	30–34	35+	
(a) PRENUPTIAL CONCEPTION						
No. of women ..	93	114	33	9	2	251
No. having subsequent pregnancy	65 (*70*)	85 (*74*)	28 (*84*)	6 (*66*)	2	186 (*74*)
No. of subsequent children	217	215	71	8	5	516
Average no. of subsequent children	3·5	2·5	2·5	1·3	2·5	2·77
(b) CHILD WITHIN A YEAR OF MARRIAGE						
No. of women ..	53	96	28	12	3	192
No. having subsequent pregnancy	27 (*50*)	34 (*35·4*)	14 (*50*)	6 (*50*)	2	83 (*43*)
No. of subsequent children	98	69	28	12	3	210
Average no. of subsequent children	3·6	2·03	2·0	2·0	1·5	2·5
(c) CHILD BORN MORE THAN A YEAR AFTER MARRIAGE						
No. of women ..	87	182	100	18	13	400
No. having subsequent pregnancy	29 (*33*)	54 (*30*)	32 (*32*)	5 (*27*)	4	124 (*31*)
No. of subsequent children	54	74	49	7	5	189
Average no. of subsequent children	1·86	1·3	1·5	1·4	1·25	1·5

TABLE VII—RELATIONSHIP IN GROUP 2 BETWEEN AGE AT MARRIAGE, INTERVAL BEFORE BIRTH OF FIRST CHILD, AND SUBSEQUENT NUMBER OF CHILDREN

Subgroup	Age at marriage (years)				
	Under 20	20–24	25–29	30–34	35+
(b) CHILD WITHIN A YEAR OF MARRIAGE					
No. of women ..	..	34	24	10	6
No. having subsequent pregnancy	..	16 (*47*)	12 (*50*)	3	..
No. of subsequent children	..	27	14	..	..
Average no. of subsequent children..	..	1·7	1·1	..	..
(c) CHILD BORN MORE THAN A YEAR AFTER MARRIAGE					
No. of women ..	3	66	100	51	20
No. having subsequent pregnancy	1	17 (*25*)	28 (*28*)	12 (*23·5*)	2
No. of subsequent children	..	24	39	16	3
Average no. of subsequent children..	..	1·4	1·4	1·3	..

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ment in the health and physique of those born. The main problem from the point of view of the reproduction-rate is to induce those who at present restrict the size of their family to 1, 2, or 3 to increase it to 3 or 4. The difficulty is largely economic; and, so long as the standard of education and the chance a child gets depend to such a large extent, as now, on the family income, there will be a very strong urge to cut down the size of the family to what the parents calculate they can afford.

REFERENCES

Burns, C. M. (1942) Infant and Maternal Mortality in Relation to Size of Family and Rapidity of Breeding, Newcastle upon Tyne.
Glass, D. V. (1938) in Political Arithmetic (edited by L. Hogben), London.
Titmuss, R. M. (1945) in Rebuilding Family Life in the Post-war World (edited by Sir J. Marchant), London.
Yudkin, J. (1944) *Lancet*, ii, 384.

DEMODEX FOLLICULORUM IN THE HUMAN NIPPLE

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IN the course of an extensive study of the structure of the human female nipple, particularly of the nerve terminations (Cathcart et al. 1946), *Demodex folliculorum* has been found in nipples stained by the Bielschowsky-Gros silver method, in which frozen sections are used.

The parasite is often stained by the silver much more deeply than are the surrounding structures; hence it stands out clearly. In other material, with the paraffin method and the usual hæmalum and eosin staining, the parasites can be seen but are much less obvious and consequently difficult to locate and identify. The Ziehl-Neelsen method can also be used; this stains the parasite deep red against the blue background of stained sebaceous matter and sebaceous gland cells.

Material.—This was obtained from five hospitals in or near Glasgow. It has been selected only in so far as the naked-eye appearance was normal and the interval before fixation short. It is important that in this silver method the tissue be fixed soon after death or after the surgical removal of the tissue from the body. The thirteen cases so far stained and investigated by this method are detailed in the accompanying table.

Findings.—Ten of the thirteen cases showed the presence of a parasite corresponding in size and structural details to *D. folliculorum* (syn. *Acarus folliculorum*). As measured in the sections, it is often about 200μ long but may be longer, chiefly as a result of lengthening of the abdomen. It has a short head, eight short legs projecting from the thoracic segments, and a long abdomen with transverse linear striation. The thoracic segments often stain more deeply with the silver than does the abdomen. With the hæmalum staining the general outline of the body is only just visible, for it does not stain deeply; but the deeply stained granules of some of the internal organs are often very clear.

The parasite may be found lying in the sebaceous material in the mouths of the sebaceous glands, with the head directed towards the living cells of the gland (figs. 1–3). In the mouth of the gland, as is readily understandable, it may give rise to little or no reaction in the gland or the surrounding tissues. In many cases, however, it is also found lying deep in the gland among the living cells, with its head very close to or almost touching the basement membrane of the gland (fig. 4). In this situation it may cause some reaction in the tissues surrounding the gland. This is often seen, and a round-cell infiltration of these tissues is common, especially between the gland and the overlying skin epithelium (fig. 5). Small areas of perivascular infiltration are not uncommon in the nipple, but these can be distinguished from those described above.

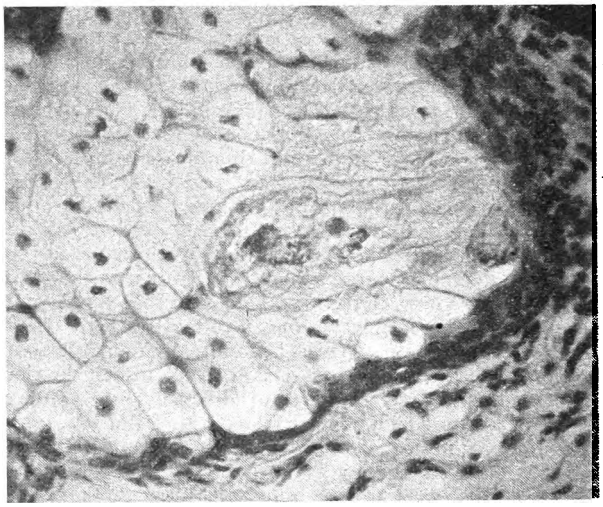

Fig. 1—*Demodex folliculorum* lying in sebaceous gland of nipple (case 2). Paraffin section, hæmalum and eosin. Outline of parasite faint, but some deeply stained granules of internal organs are clearly seen. (×300.)

DISCUSSION

Simon (1843) first discovered this parasite of man in 1842. Jakowski (1880) mentioned the finding of numerous examples of *D. folliculorum* in the mouths of the sebaceous glands of the human nipple.

Fantham et al. (1916), who figure and describe this parasite, state that it is common in the hair follicles, meibomian glands, and sebaceous glands, particularly of the face, nose, lips, and forehead, but may also be present in the skin of the abdomen and in other areas. They suggest that it may be present in 50% of people of all ages, including children. They also mention that it may be present in over 60% of apparently normal borders of the human eyelid. Other varieties occur in the dog, cat, and other animals. They hold that its pathogenicity is not yet proved, though it may be responsible for circumscribed deeply pigmented areas of the skin. The extent to which obstruction of the sebaceous gland ducts of the skin and agglomeration in the meibomian glands are factors in the production of inflammation in comedones and blepharitis is not certain.

Brumpt (1936) gives a similar account of the prevalence of *D. folliculorum* and remarks also on the very large number of parasites which may be present in an individual gland.

CASES OF DEMODEX INFECTION IN SEBACEOUS GLANDS OF THE NIPPLE

Case	Age (yrs)	Source of material	Demodex	Degree of infection	Round-cell infiltration	Remarks
1	39	Mastectomy	Present	Heavy	Present	Carcinoma
2	60	Mastectomy	Present	Heavy	Present	Carcinoma
3	63	Mastectomy	Present	Light	Absent	Carcinoma
4	28	Necropsy	Absent	..	..	No abnormal breast condition
5	42	Necropsy	Present	Heavy	Present	No abnormal breast condition
6	43	Mastectomy	Present	Light	Absent	Carcinoma
7	48	Mastectomy	Present	Light	Absent	Carcinoma
8	35	Mastectomy	Present	Medium	Present	Carcinoma
9	56	Mastectomy	Present	Light	Absent	Carcinoma
10	40	Mastectomy	Absent	..	..	Mastitis
11	45	Necropsy	Present	Heavy	Present	No abnormal breast condition
12	27	Mastectomy	Absent	..	..	Mastitis
13	27	Necropsy	Present	Heavy	Present	No abnormal breast condition

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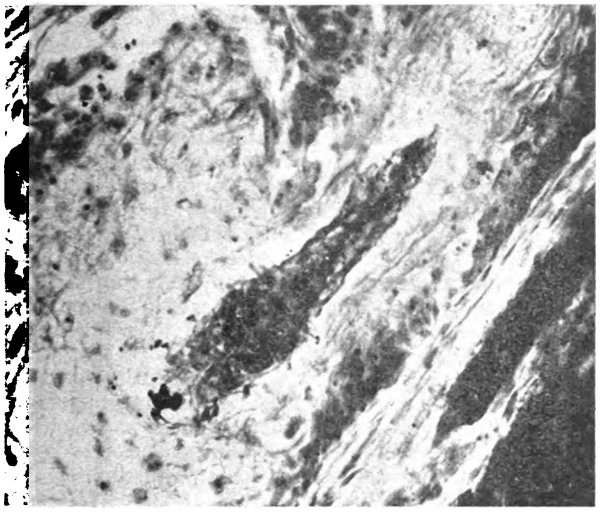

Fig. 2—*D. folliculorum* with head and thorax lying in sebaceous gland, and abdomen extending out into sebaceous gland duct (case 11). Frozen section, Bielschowsky-Gros staining. Outline of parasite much more obvious, and paired legs visible. Reduction of silver has given rise to small black deposits on surface of parasite. (×300.)

Fig. 3—Three parasites in one field, which shows several sebaceous gland lobules (case 1). Prep. as fig. 2. One parasite in sebaceous gland in centre of field is cut longitudinally; another in gland left centre is cut in an obliquely transverse plane; another in duct passing to left upper corner is cut longitudinally. (×75.)

Andrews (1938) notes that this parasite usually infects the sebaceous glands of the face and that it is not infrequent in coarse oily skins. He says that it is not found in infants, and that, though it is generally considered harmless, facial hyperpigmentation and pustules have been ascribed to it. The finding of these parasites in large numbers in many cases of rosacea may have some ætiological significance. It has also been suggested that the chronic irritation set up by it may be important in the production of epitheliomata.

The significance of its prevalence in the sebaceous glands of the nipple in this short series cannot be assessed without further investigation over wider areas. The penetration of the parasite deep into the sebaceous glands in some instances and the subsequent round-cell infiltration certainly can lead to an area of lowered resistance on the skin surface. The subjection of such an area to the degree of suction described by Gunther (1945) may lead to the breaking down of the epithelium at this point and be a contributing factor in the production of sore nipples. This seems worthy of further investigation.

The fact that it has been thought that its presence in the sebaceous glands of the face has little pathological significance does not mean that the same is true of the sebaceous glands of the nipple, in view of the degree of stimulation which this area receives during suckling.

It is not suggested that the presence of the parasite here is of real importance in the pathogenesis of carcinomatous change in the epithelium of the nipple as in Paget's disease.

SUMMARY

In ten out of thirteen cases *Demodex folliculorum* has been found in the sebaceous glands of the human female nipple.

Evidence of a response to irritation by the parasites lying deep in the gland has been found in the presence of round-cell infiltrations.

Its relevance as a factor in the incidence of sore nipples has been suggested.

My thanks are due to the surgeons and pathologists who have so kindly assisted in the collection of the material, to Prof. E. P. Cathcart, at whose suggestion the wider study was instituted, and to Mr. F. W. Gairns for the very high standard of technical assistance.

REFERENCES

Andrews, G. C. (1938) Diseases of the Skin for Practitioners and Students, Philadelphia and London, 2nd ed., pp. 259, 532.
Brumpt, E. (1936) Précis de parasitologie, Paris, vol. II, p. 1108.
Cathcart, E. P., Gairns, F. W., Garven, H. S. D. (1946) in preparation.
Fantham, H. B., Stephens, J. W. W., Theobald, F. V. (1916) The Animal Parasites of Man, London, pp. 522, 708.
Gunther, M. (1945) *Lancet*, ii, 590.
Jakowski, S. M. (1880) abstracted in *Jber. Anat. Physiol.* **9**, 275.
Simon, G. (1843) *Arch. Méd. comp.* **1**, 45 (cited by Fantham et al., op. cit. p. 823).

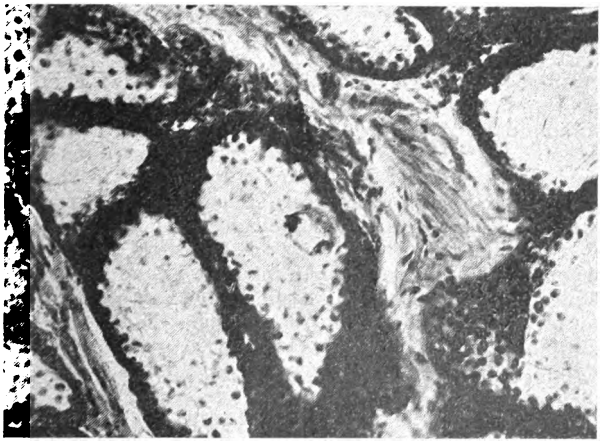

Fig. 4—Parasite cut transversely through thorax (case 5). Prep. as fig. 2. This parasite lies deep in sebaceous gland very close to basement membrane. (×160.)

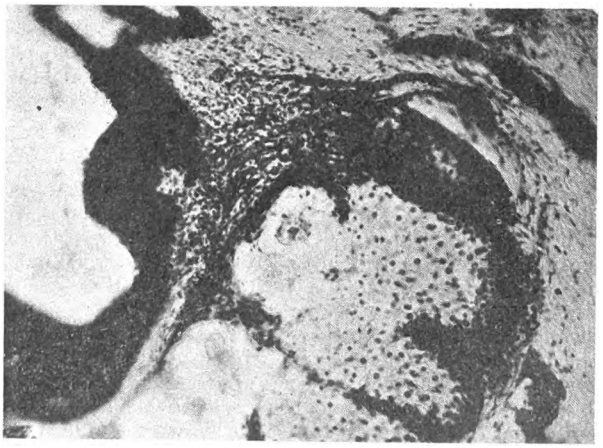

Fig. 5—Round-cell infiltration between sebaceous gland and surface epithelium (case 2). Prep. as fig. 2. Two parasites cut more or less transversely are seen lying in sebaceous gland. (×75.)

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GRAMICIDIN S

REVIEW OF RECENT WORK

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THE purpose of this article is to summarise some recent experience gained in work with gramicidin S, both along theoretical and clinical lines. Previous data reported by Gause and Brazhnikova (1944), Belozersky and Passhina (1944), and Sergiev (1944) need not be repeated here. Since then important improvements have been made in the large-scale production of gramicidin S in U.S.S.R., so that yields now attain about 3 g. of crystalline material per litre of the nutritive medium; the study of the chemistry of gramicidin S, mainly by Synge and his colleagues in Great Britain, has revealed an unexpected simplicity in its composition; and numerous statistical data have been collected in U.S.S.R. concerning the efficiency of its application to human therapy. Gramicidin S has also been forwarded to Australia and is being used in military hospitals in the tropical region under the supervision of Dr. N. Hamilton Fairley. It is hoped that similar studies in this field will be undertaken in other countries.

PRODUCTION AND CHEMISTRY

The organism producing gramicidin S is now identified as a new subspecies, *Bacillus brevis* var. Gause-Brazhnikova, by Sharkova and Brazhnikova (1946). Its relation to *Bacillus brevis* Bergey is given in table I.

The inability of Russian strains to liquefy gelatin and hydrolyse starch is remarkable, and these differences perhaps surpass the rank of a subspecies. There are now at our disposal several strains of such bacteria isolated from different parts of U.S.S.R., all of them possessing common growth properties and producing the same crystalline gramicidin S. Though both rough and smooth forms of the bacteria produce gramicidin S, only rough variants are selected and used for commercial production. Rough variants sporulate abundantly, whereas smooth variants gradually lose sporulating capacity in subcultures; hence the latter are inconvenient for handling of the cultures. Kashintseva (1946) reports high yields of gramicidin S produced commercially on yeast autolysate with tryptone.

Though gramicidin S, as isolated from the bacterial culture, is a hydrochloride, Belozersky and Passhina (1945) described an easy method of preparing the free peptide in crystalline form. The melting-point of the latter is 245°–257° C. Synge (1945) has reported the important discovery that gramicidin S consists of only five different amino-acid residues: *l*-ornithine, *l*-proline, *l*-valine, *l*-leucine, and *d*-phenylalanine, occurring in unimolecular proportions. As is known, gramicidin (Dubos) and tyrocidine hydrochloride are more complicated. The remarkable simplicity of gramicidin S will probably make it a favourite object in the chemical study of antibiotic peptides.

ACTION ON PATHOGENIC BACTERIA

Pershina (1946), in an extensive investigation, confirmed the much greater efficiency of gramicidin S in killing staphylococci, as compared with tyrothricin, gramicidin, and tyrocidine hydrochloride. What is new in this investigation is the demonstration of selective action of gramicidin S on gram-negative bacteria suspended in nutrient broth. Whereas tyrothricin and its derivatives are inefficient under these conditions, gramicidin S kills many species of gram-negative bacteria but does not affect others. The selective character of its action on this group of bacteria is shown in table II.

It is remarkable that dysentery bacilli are very susceptible to the lethal action of gramicidin S, whereas typhoid and paratyphoid bacilli (with the curious exception of some strains of *Bact. paratyphosum A*) are resistant to the action of gramicidin S. The search for a biochemical foundation of this selective action of gramicidin S seems to be very promising and may lead to important conclusions.

It has also been shown that the lethal action of gramicidin S on gram-positive and gram-negative bacteria is not reduced in the presence of serum of human blood. Krestovnikova and Taratorina (1946) have shown that gramicidin S, in common with tyrothricin (Rodaniche and Palmer 1943), kills enterococci resistant to penicillin and sulphonamides. According to their views, human enterococci play an important part in many septic processes, and their efficient control in wounds is an important task. Zurafsky (1946) has presented conclusive evidence that early local application of gramicidin S prevents anaerobic infection in guineapigs.

Since gramicidin S is manufactured in many cities of U.S.S.R., numerous observations of its action on pathogenic bacteria are scattered in local publications.

TABLE I—SYSTEMATIC POSITION OF BACTERIA PRODUCING GRAMICIDIN S

Characters	*B. brevis* Bergey	*B. brevis* var. Gause-Brazhnikova (producing gramicidin S)		
		1st variant*	2nd variant	3rd variant
Morphology ..	Rod with central spore	Same	Same	Same
Mobility ..	+	+	+	+
Flagellæ ..	Peritrich	Same	Same	Same
Gram's stain ..	+	+	±	±
Gelatin ..	Liquefaction	No growth	No growth	No liquef.
Agar	Thick, white, moist growth	Moderate, yellowish-white growth	Same	Same
Bouillon ..	Film, turbidity, flaky sediment	Same	Same	Same
Glucose, lactose, mannite, sucrose, maltose	No acid or gas	Same	Same	Same
Hydrolysis of starch	+	−	−	−
Indole	−	−	−	−
H_2S	No data	+	+	+
Blood-serum ..	No liquefaction	Liquef.	No liquef.	Liquef.
Optimal temperature	37° C	40°–41° C	40°–41° C	40°–41° C

* Recommended for commercial production.

ACTION ON TISSUES

Bulgakov and Lasarenko (1945) have made a thorough study of the action of gramicidin S, 'Rivanol,' and sulphanilamide on regeneration of experimental non-infected skin wounds in the ox. Eighty wounds were made, treated daily by different antiseptics in the concentrations recommended for clinical use, and regeneration processes examined histologically. They conclude that epithelisation of wounds treated with gramicidin S is somewhat more rapid than in control wounds. At the same time rivanol and sulphanilamide exert an inhibitory action; thus when control wounds had epithelised completely, in wounds treated with rivanol or with sulphanilamide epithelium covers only half of the wound surface.

CLINICAL RESULTS

The prophylactic effect of gramicidin S on suppuration can now be evaluated in objective terms, so far as

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TABLE II—SELECTIVE ACTION OF GRAMICIDIN S ON VARIOUS GRAM-NEGATIVE BACTERIA IN NUTRIENT BROTH. CONCENTRATION, 400 μG. PER ML. OF BROTH. (FROM PERSHINA 1946.)

Organism	No. of strains studied	No. of strains killed	No. of strains not killed
B. dysenteriæ Shiga	15	15	0
,, Flexner	26	24	2
,, Kruse	4	3	1
,, Newcastle	3	3	0
Bact. typhosum	9	0	9
Bact. paratyphosum A	10	3	7
Bact. paratyphosum B, Bact. paratyphosum Breslau, *Bact. enteritidis, Bact. morgani A* and *B* ..	10	0	10

statistical evidence is available on this point. A research committee headed by Prof. N. N. Burdenko, president of the Academy of Medical Sciences of U.S.S.R., has made a careful study in this field, with numerous bacteriological controls and accurately recorded clinical data.

Two groups of 250 persons each, with approximately identical recent wounds, were selected for study. All were given adequate surgical treatment. After this, in the control group, sulphanilamide and other antiseptics of proved value were applied locally with the purpose of preventing suppuration. In the other group an aqueous solution of gramicidin S (400 μg./ml.) was used for the same purpose. It was abundantly applied locally, and irrigation and wet dressings were subsequently repeated two or three times. A comparison of the progress in these two groups gives an idea of the capacity of gramicidin S to prevent suppuration, as compared with other antiseptics now in current use. Table III shows the data for wounds of soft tissues.

As judged by the temperature reaction, 65% of persons treated with gramicidin S (versus 37% of controls) had no suppuration after surgical treatment. Again, there were only 14% of long-lasting suppurations in the gramicidin S group, versus 52% in the controls.

The corresponding data for wounds with bone injuries are given in table IV and show clearly the advantage of using gramicidin S to prevent suppuration. Among other data reported by the same committee is the fourfold decrease of anaerobic infection in the gramicidin S group as compared with controls, and very favourable

TABLE III—ACTION OF GRAMICIDIN S ON WOUNDS OF SOFT TISSUES

Temperature judged by body temperature after treatment		Treated with gramicidin S (%)		Controls (%)	
Normal throughout		29	65	14	37
Fell to normal in—	1– 5 days	36		23	
	6–10 days	21		10	
	11–20 days	11	14	34	53
	21–40 days	3		19	

TABLE IV—ACTION OF GRAMICIDIN S ON WOUNDS WITH BONE INJURIES

Normal throughout		26	46	11	18
Fell to normal in—	1– 5 days	20		7	
	6–10 days	23		25	
	11–20 days	21		32	
	21–40 days	9	10	14	25
	later than 40th day	1		11	

results obtained in the treatment of empyema with gramicidin S.

Grach (1945) and Levinson and Belkina (1945) have reported their observations concerning the usefulness of gramicidin S in the treatment of infected wounds. The former reports 215, and the latter report 67 cases. They wholly confirm previous data summarised by Sergiev (1944) and indicate favourable results in the treatment of burns, carbuncles (with incision), and post-operative suppuration. The technique of application of gramicidin S has been already reported by Sergiev (1944).

OTHER APPLICATIONS

Udenich and Dutova (1945) and Marchenko and Rachman (1946) have successfully used gramicidin S in the production of cowpox vaccine. Gramicidin S in a concentration of 800–1600 μg. per ml. of glycerinated pulp rapidly cleans the virus from various contaminating microbes without injuring it. The pulp so prepared is practically free from bacteria at the end of the first week and remains active as long as the control glycerinated pulp prepared without gramicidin S.

REFERENCES

Belozersky, A. N., Passhina, T. S. (1944) *Lancet*, ii, 716.
— — (1945) *Biokhimiya*, **10**, 344.
Bulgakov, N., Lasarenko, F. (1945) *Rep. Chkalov Inst. Microbiol.*
Gause, G. F., Brazhnikova, M. G. (1944) *Lancet*, ii, 715.
Grach, J. (1945) *Rep. Chkalov Inst. Microbiol.*
Kashintseva, N. (1946) *J. Microbiol. epidem. U.S.S.R.* **2.**
Krestovnikova, V., Taratorina, O. (1946) *Ibid*, **2.**
Levinson, L., Belkina, E. (1945) *Hosp. Works*, **4**, 42.
Marchenko, G., Rachman, E. (1946) *J. Microbiol. epidem. U.S.S.R.* **2.**
Pershina, Z. (1946) *Ibid*, **2.**
Rodaniche, E. C., Palmer, W. L. (1943) *J. infect. Dis.* **72**, 154.
Sergiev, P. (1944) *Lancet*, ii, 717.
Sharkova, M., Brazhnikova, M. G. (1946) *J. Microbiol. epidem. U.S.S.R.* **2.**
Synge, R. L. M. (1945) *Biochem. J.* **39**, 363.
Udenich, V., Dutova, N. (1945) *Rep. Chkalov Inst. Microbiol.*
Zurafsky, N. (1946) *J. Microbiol. epidem. U.S.S.R.* **2.**

OVARIAN CYSTECTOMY OF TWISTED CYSTS

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IN 1916 Victor Bonney accidentally discovered that ovarian cysts could be enucleated, leaving behind the normal ovarian tissue. This operation he termed "ovarian cystectomy," and its introduction marked a great step forwards in ovarian surgery, for it showed that in young women with bilateral benign ovarian tumours castration could be avoided.

Although Bonney[1] has consistently preached the doctrine of conservative ovarian surgery in young women, it still appears that this operation is not widely practised. Few books and papers on the surgery of the ovary mention it, and some writers have condemned the operation while admitting that they have never performed it. Many have sacrificed the whole of the affected ovary because the disease is unilateral. This is an attitude all too commonly adopted by surgeons in regard to bilateral organs. If a conservative operation can achieve the same results as a radical one it is obviously better, and the choice of the radical operation to save time is a prostitution of the art of surgery.

Such references as there are to this operation either make no mention of its use in cases of twisted ovarian cysts, or they simply state that it cannot be done. My experience with many cases led me to doubt that this statement was correct, and I determined to try to perform it in a suitable case. The object of this paper

1. Bonney, V. *Practitioner*, 1924, **112**, 137; *Med. J. Aust.* 1928, **1**, 741; *J. Obstet. Gynæc.* 1937, **44**, 1, and 1938, **45**, 250; *S. Afr. med. J.* 1938, **12**, 113, Technical Minutiæ of Extended Myomectomy and Ovarian Cystectomy. London, 1946 (pp. 259-280).

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is to describe the technique and results obtained in 15 cases in which I have enucleated a twisted ovarian cyst.

Before describing the method it is necessary to mention the observations which led me to conclude that this operation was possible. I noted in operating on certain ovarian cysts that the pedicle was loosely twisted, sometimes more than once, yet there was no infarction, because the twists were not sufficiently tight to cause either venous or arterial obstruction. Nearly all these patients had vague lower abdominal discomfort, or sometimes recurrent attacks. On the other hand there was the type of patient admitted as an emergency case because of an attack of severe colicky pain, often associated with vomiting. When the abdomen was opened in this type of case infarction was always seen, although its degree varied with the length of time that symptoms had been present. Of 120 such patients 119 gave a history of lower abdominal discomfort or pain before the severe attack, and in some cases these symptoms had been present for some months. It appears, then, that the mild recurrent nagging pain in these cases is due to torsion without infarction, but the severe symptoms presented by the typical "twisted ovarian" are due to infarction. I reasoned that, if the significance of these findings was appreciated, cysts that were threatened with total infarction could be recognised before this catastrophe took place and while there was still time to conserve ovarian tissue; and that, if infarction had taken place, it might still be possible to intervene before serious intravascular clotting affected the main ovarian vessels.

TECHNIQUE

There appeared to me to be a similarity between a twisted ovarian cyst and a knuckle of gut strangled in a hernial sac or between bands. In the latter case, where there is doubt about the viability of the bowel it is usual after releasing it to cover it with hot packs and to observe it for change of colour and the appearance of peristalsis. If it becomes pink and movement returns, it is considered viable; but should it remain black and motionless resection is indicated. It was easy to adapt this technique to the infarcted ovarian cyst. First its pedicle was untwisted, and then it was covered with hot packs and its colour watched. If it regained its normal colour, I concluded that ovarian cystectomy could be carried out.

In the first four cases that I saw after planning this technique the patients were over 50 years of age, and therefore there was no point in conserving the ovary. Before removing these tumours, however, I tested my theory, and in three of the four, as soon as the twists were undone, the colour, which had been very dark red, at once began to lighten and after some minutes was nearly normal. In the fourth case it was not until hot packs had been applied that any return to normality was noted, but after 10 minutes this cyst was almost bright pink. The colour change first appeared at the fimbriated end of the tube, and I have since used this as a guide.

The first case that I encountered in a young woman had shown symptoms of infarction for at least four days, and at operation I observed no colour change after surrounding the tumour with hot packs for 10 minutes. The second patient was a girl, aged twenty-three, who was two months' pregnant. She was admitted to hospital with symptoms of torsion and infarction of an ovarian cyst of twelve hours' duration. At operation I found a right twisted ovarian cyst, the size of a Jaffa orange, lying behind the pregnant uterus. It was dark blue, with black patches scattered over its surface. I untwisted the cyst and applied hot packs to it. At once it began to regain its normal colour. I identified the normal ovarian tissue at the apex of the pedicle and resected the tumour. By the time the ovary had been sutured it was normal in colour. The cyst was a benign follicular cyst containing a large corpus luteum. As was expected, the patient aborted on the tenth day after operation.

RESULTS

I have now performed ovarian cystectomy in 15 cases of twisted ovarian cyst; 2 of these patients had only one ovary at the time of operation, and 1 of them has since become pregnant; 4 were pregnant when the operation was performed. In the case described above, abortion followed the removal of the corpus luteum in early pregnancy. In the other 3 no corpus luteum was seen in the removed portion of ovary, and abortion did not take place. In 1 of the pregnant patients the pedicle was twisted seven times, and the fallopian tube was badly constricted at the point of torsion. I did not remove it, but I wondered if some permanent damage might have been done, and if the constriction would remain and possibly become the seat of an ectopic gestation later. Six weeks after delivery I admitted the patient to hospital and performed a salpingography. The affected tube showed no deformity and was readily patent, looking exactly like the tube on the opposite side. The recovery of 1 patient was delayed by postoperative pneumonia; the others made an uninterrupted recovery, except the patient who aborted. I reopened this patient's abdomen eighteen months later, when I performed a cæsarean section for placenta prævia in her second pregnancy. The affected ovary was slightly smaller than the one on the other side, but appeared normal and had many follicles on its surface. There were no adhesions, although a thickened white line, which I took to be my suture line, was visible on the surface of the ovary. All 15 patients have been followed up for various lengths of time; 4 have become pregnant, and the others all menstruate normally, although 1 had six months' amenorrhœa after the operation.

The cysts were 3 simple cysts of follicular origin, 4 dermoids, and 8 multilocular cystadenomas. The largest cyst weighed 8 lb.

The key to success is early diagnosis and early operation, but even unfavourable-looking tumours may be amenable to conservative surgery.

SUMMARY

A technique is described for performing ovarian cystectomy on certain twisted ovarian tumours.

The results of 15 such operations are given.

I am indebted to Prof. E. Farquhar Murray and Mr. H. Harvey Evers for allowing me to operate on cases admitted under their care.

HERNIA THROUGH THE FORAMEN OF WINSLOW

REPORT OF A CASE

LEON GILLIS

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A SURVEY of the literature shows that hernia of the foramen of Winslow is rare and has a very high mortality. There appear to be two forms: in one the hernia passes into the foramen of Winslow and remains in the lesser sac; in the other it re-enters the peritoneal cavity through the gastrohepatic omentum. Either the small intestine or the large intestine may enter the foramen of Winslow.

This condition has been reviewed by Silverstone (1939) and by Edwards and Stewart (1943). The present case may throw some light on both the predisposing factors and the anomalies which are said to exist.

A rigger, aged 41, was admitted to the Birkenhead Municipal Hospital at 9 P.M. on Sept. 9, 1941, with a history that he had been seized with a sudden severe pain in the epigastrium while at stool at 2 P.M. that afternoon. The pain was sharp and continuous, did not radiate, and had not altered in character since onset. He had vomited four times before

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admission. He had no previous history of any digestive upset. His bowels had always been regular and there were no urinary symptoms.

On examination he was very shocked and obviously in great pain. There was tenderness in the epigastrium and some guarding, but no rigidity. No free fluid could be determined. The central nervous and cardiovascular systems showed no abnormality. He had some bronchitis. Temperature 98° F, pulse-rate 60. Acute intestinal obstruction or perforation was tentatively diagnosed.

Operation.—Under general anæsthesia the patient was operated on at 10 P.M. The peritoneal cavity was opened through a midline incision. There was some bloodstained fluid present in the peritoneal cavity. No perforation could be found, but there was an unusual band running across the posterior abdominal wall, towards the right hypochondrium. This consisted of small intestine with its mesentery. As this was abnormal anatomically, the question arose whether this was not some form of transposition of the viscera. Further investigation showed that it was an internal hernia into the foramen of Winslow.

The anatomical boundaries of the foramen of Winslow preclude active dissection, but nevertheless it is surprising how much this opening can be enlarged, without injury to any of the large structures which surround it. The bowel could be coaxed back into the greater sac by stretching the foramen of Winslow with the fingers, by pressure on the gastrohepatic omentum, and by gentle traction on the entering loop.

The loop, when reduced, was found to be about 18 in. of jejunum; it was purple and frayed but not devitalised. The proximal loops were distended, and the distal loops were collapsed. Resuscitative measures with warm towels improved the bowel, except for an area about the size of a shilling in the mesentery, which was black. As this was some distance away from the mesenteric surface of the bowel, it was replaced in the peritoneal cavity.

The patient made an uninterrupted recovery and is quite well to date.

This case again demonstrates the paradoxical pulse-rate previously described in this condition: the rate never rose above 80 per min. and was generally about 60.

The history of sudden pain while at stool suggests that the increase of intra-abdominal pressure allowed the small intestine, attached to an abnormally long mesentery, to be driven into the foramen of Winslow, which must have been open and not a closed slit, and that about 18 in. of small intestine could accommodate itself in the lesser sac, without passing through the gastrohepatic omentum.

According to Silverstone (1939), Moynihan and Dobson (1906) suggested that at least one of the following anomalies existed and acted as a predisposing factor: (1) a common mesentery for the whole of the intestine; (2) the absence of secondary fusion of the ascending colon to the posterior abdominal wall; (3) an abnormally large foramen (the normal foramen usually admits the index finger and occasionally the index and middle fingers); or (4) an abnormally long mesentery allowing undue mobility of the intestine.

REFERENCES

Edwards, H., Stewart, W. (1943) *Brit. med. J.* i, 343.
Moynihan, B. G. A., Dobson, J. F. (1906) Retroperitoneal Hernia, 2nd ed., London.
Silverstone, M. (1939) *Lancet*, ii, 786.

"... No branch of science or art furnishes a more striking example than does medicine of the fact that increasing specialisation is necessarily accompanied by increasing interdependence and coöperation among the specialised fields. In the early days all the sciences were combined together, frequently in the same individual. Later the various specialties had a tendency to run their separate courses. Now we find them coming together again for mutual support. It is something like the story of the prodigal son, who, after the adventures of an independent career, is glad to come back again to his family."—KARL T. COMPTON, *J. Amer. med. Ass.* 1946, 131, 77.

Medical Societies

SOCIETY OF MEDICAL OFFICERS OF HEALTH

AT a meeting of the fever group on June 14, with Dr. M. MITMAN, the president, in the chair, a discussion on

Pertussis Prophylaxis and Control

was opened by Dr. H. J. PARISH (Wellcome Physiological Research Laboratories). Whooping-cough, he said, is the most serious of the acute specific infections of childhood; in England and Wales it causes at least 2000–3000 deaths annually, of which 90% are in children under five years. Dissatisfaction with the results of specific prophylaxis is indicated by the variety of vaccines and doses employed by different investigators; and research is hampered by the lack of a good laboratory test. Vaccines are prepared today from virulent phase I organisms, either on Bordet-Gengou blood-agar or on modified Hornibrook liquid medium; the suspensions can be precipitated with alum and washed in saline or buffer solution. Clinical evidence of their efficacy is equivocal.

H. Proom, in work shortly to be published, has obtained low-grade protection with vaccines (made with or without alum precipitation) in mice challenged with living culture intraperitoneally. Antibacterial serum is also relatively ineffective, but antitoxic serum, from horse or rabbit, protects mice against intraperitoneal infection. This supports the view that the death of the control mice is due to a toxin, which can be prepared from frozen and thawed, dried and ground bacilli; on the other hand, the existence of some antibacterial immunity following phase I vaccination is suggested by a pronounced reduction in the number of organisms in the blood of mice infected by the intraperitoneal route. Unwashed phase IV vaccines have a negligible effect.

The rôle of the toxin in human infection is uncertain, but there is some evidence that it assists the organisms to invade the tissues. However, it is noteworthy that so far no antitoxin has been demonstrated in convalescent sera.

When virulent *Hæmophilus pertussis* is injected into mice intranasally, pneumonia is set up; the bacteria multiply in the lung for a fortnight and then gradually die out. The value of vaccine against this intranasal infection is demonstrated both by some increase in the survival-rate of the vaccinated group of animals and by a reduced bacterial count in the lung. Antibacterial and antitoxic sera also control the lung infection, bacterial counts being often nil. A highly potent antibacterial and antitoxic horse-serum is now on clinical trial, but the results have so far been disappointing.

Thus, extensive experiments in mice and collateral clinical evidence indicate that no form of specific immunisation is likely to be very effective against whooping-cough. In mice the protection is erratic; in man also it is variable and at best of low grade. Research on the problem of the control of pertussis is complicated by the lack of uniformity of the cases and the difficulties of clinical and bacteriological diagnosis. The sulphonamides and penicillin have been used more or less indiscriminately, principally to control the secondary invaders, and streptomycin is now on trial.

THE CLINICAL SIDE

Dr. W. GUNN did not think it essential that the worth of the antigen should be proved before large-scale immunisation is undertaken. In whooping-cough, where infectivity is very variable and for which there is no reliable test of immunity, only investigation on a large scale can furnish the answer sought. If given an explanation, few parents would refuse to have whooping-cough antigen combined with diphtheria A.P.T. in the same injection. Reactions are no greater than when each antigen is given singly and, far from interfering with one another, each may enhance the immunising properties of the other. It is, however, preferable to begin injections at 5–6 months or even earlier and not at 9–12 months as is more usual in diphtheria prophylaxis. Two or three injections (depending on the reaction to the first) at intervals of 4 weeks, given into the deltoid or vastus externus, constitute the course; a single injection of the combined antigen is desirable on first attendance at school. Dr. Gunn has used combined A.P.T. and alum-treated

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whooping-cough vaccine without untoward effect, but as the inoculated group were all nursery children who shortly afterwards were transferred outside London, follow-up inquiries were difficult. Standardised records, which accompany the children as do ration books and identity cards, are essential for a proper statistical investigation. Special examinations, such as slide-agglutination and complement-fixation tests, should be made at intervals on random samples of the immunised as well as of the controls, since latent immunisation may give unduly flattering results.

The urgent need for active immunisation should not blind one to other measures of control. Isolation by itself can do little good since the damage is usually done by the time the diagnosis is made, though with white-cell counts and nasopharyngeal swabs the condition may be diagnosed before the onset of the whoop; human or rabbit hyperimmunised serum may prevent or attenuate an attack in known contacts or help in early or severe cases. Active immunisation may be started at the same time, as in diphtheria control, if the risk of the disease is grave; and in the very young the risk is always grave.

PREPARATION AND USE OF VACCINE

Dr. J. UNGAR (Glaxo Laboratories) said that in four years' investigation attention was ultimately concentrated on an alum-precipitated vaccine which produced good antigenic activity in animals; preliminary clinical trials showed that the vaccine, properly administered, is innocuous. The total dose recommended in successful tests in the U.S.A. was about 100,000 million for Sauer's vaccine, or 30,000–40,000 million for alum-precipitated vaccine. The interval recommended is 3–4 weeks.

Animal tests serve to determine (1) the virulence of the strain to safeguard the full antigenic value of the vaccine, and (2) the effectiveness of the antigenic action of different products. Some workers use mice, employing either the intranasal, intratracheal, or intracerebral route for testing the effect of live cultures, and the intraperitoneal route for testing the toxic effect. The rabbit seems to be a more reliable test animal, on which both components of vaccines—antibacterial and antitoxic—can be evaluated. But combined tests on mice and rabbits will help to differentiate between effective and less effective vaccines. More evidence is needed to show the rôle of pertussis toxin in the pathology of experimental pertussis in animals and the usefulness of including the toxic fraction in vaccines. The pertussis toxin differs in some respects from the usual exotoxins, and the clinical value of the antitoxic serum has still to be proved. Laboratory evidence indicates that the toxic fraction in live bacilli has a specific effect in animals which is counteracted by injection of antitoxin.

It is now recognised, said Dr. Ungar, that the optimal time to immunise is in the first half-year of life, preferably at the age of 5–7 months; it takes about 3 months for the immunity to be well established, depending on the type of vaccine and the intervals between doses. In the U.S.A. prophylactic treatment has been found to confer complete or partial immunity such as may follow whooping-cough. Serum treatment (convalescent, hyperimmune, or animal) has proved valuable in prophylaxis of contacts in the first 6–7 days of the incubation period.

Reviews of Books

The X-ray Treatment of Accessible Cancer

D. WALDRON SMITHERS, M.D., D.M.R., director of radiotherapy departments of the Royal Cancer Hospital (Free) and the Royal Free Hospital. London: Edward Arnold. Pp. 147. 40*s*.

Dr. Waldron Smithers sets out to discuss accessible cancer and its treatment with X rays of limited penetration. He gives a detailed description of the good use which has been made of short-distance low-voltage "contact" X-ray therapy at the Royal Cancer Hospital, and discusses the biological effects of this radiation. The first chapter deals shortly with the problems of treatment, and the second passes at once to a full and well-illustrated description of the two types of apparatus which may be used: the Philips 45 kV. apparatus and the Siemens 60 kV. monopan apparatus, originally used by Chaoul, whose name has been associated with the method since its first introduction to this country. Other apparatus for treatment at higher voltages is also included, but throughout the book emphasis is on the "contact" method.

Between 1935 and 1943, 320 cases of squamous carcinoma of the skin were treated, and the symptom-free rate at three years is 69%. The number of cases of basal-cell carcinoma is larger (654), but the tumour is so much easier to cure in its early stages that the results are less important. Cancer of difficult sites such as the lip, ear, and eyelids requires ingenious planning of radiotherapy, and some clever devices are illustrated here, accompanied by useful dose-distribution diagrams for two directly opposing fields of X rays at 60 kV. For cancer of the mouth special intra-oral apparatus is needed and some good results are illustrated in photographs, but the numbers treated are too small for comparison with other methods. A special chapter discusses the mode of action of radiation on malignant cells and the possibility of making a quantitative analysis by cell-counts, which would guide the radiotherapist in choosing dosage for subgroups within the accepted pathological classification of tumours. This promising work is still in too early a stage to be allowed to influence the treatment of patients.

Descriptions of method are uniformly good, but the attempt to discuss all the accessible cancers—whether they are suitable for these methods or not—is rather confusing; for instance, cancer of the cervix, which should not be treated by "contact" methods, really deserves no place in this book. However, no radiologist will fail to secure a book which provides him with so much valuable information in a form reminiscent of the best pre-war publications.

Post War Britain

Editor: Sir JAMES MARCHANT, K.B.E., LL.D., F.R.S.E., with an introduction by Lord WOOLTON. London: Eyre and Spottiswoode. Pp. 240. 12*s*. 6*d*.

THIS is a series of essays by eleven experts in their own subjects, ranging from health to the organisation of scientific research, of which those on health by Lord Horder, on food by Sir John Orr, and on housing by Sir Ernest Simon will be of interest to the medically minded. Lord Horder's essay, of course very attractively written, ends with the assurance that the adventure for health is well worth while, though man is wilful and inconstant. "Before this quest for Health, therefore, looms the 'Diagnosis of Man,' and with that also we must deal if we wish to arrive at our goal." Sir John Orr's thesis is that only by international action can we feed the world satisfactorily and fulfil the promise of the Atlantic Charter and the recommendations of Hot Springs; he too is hopeful. Sir Ernest Simon's contribution is crammed with information of value in the practical aspects of financing a housing scheme. He points out that interest and amortisation between them account for the major part of any subsidy. If the interest on borrowed money could be cut down to $1^1/_2$% it would "from the point of view of securing low-rented houses represent by far the most important single contribution that the Government could make." He, like the others, is hopeful, and with the low rate offered in Exchequer Bonds 1950 for the conversion of Government loans maturing 1945–49 we may be hopeful too.

Year Book of General Therapeutics 1945

Editor: O. W. BETHEA, PH.M., M.D., F.A.C.P., formerly professor of clinical medicine, Tulane University school of medicine. Chicago: Year Book Publishers. London: H. K. Lewis. Pp. 456. 18*s*.

THOROUGHLY up to date (it includes abstracts of articles published in December, 1945), this yearbook contains a well-balanced collection of the important articles on therapeutics which have appeared during the year, though with a natural bias in favour of American contributions. Penicillin takes pride of place, occupying more than a quarter of the book, but other branches of therapeutics are given their share.

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THE LANCET

LONDON: SATURDAY, JULY 13, 1946

Out of Committee

AFTER twenty days' deliberation in committee the National Health Service Bill has returned to the House of Commons, and now awaits further debate on the report stage and the third reading. It returns in familiar form, and the cynic may well be heard saying that, for all the change visible, the twenty days might well have been saved. But the cynic would be wrong. The value of the committee's efforts cannot be gauged by merely examining the comparatively few amendments which were successful and therefore modified the wording of the Bill. There were many other amendments which were withdrawn but nevertheless served their purpose of inducing the MINISTER OF HEALTH to make a clause clearer, or to declare the Government's designs as regards some particular part of this vast and varied field. Often his attention was drawn to a possible interpretation which was both unsuspected and undesirable; and as often he promised to look again at the scope or wording, and to see that ambiguity or injustice is removed, before the Bill continues its passage through Parliament. Nobody can now complain that detailed scrutiny has not been given, and that the MINISTER'S intentions have not been elicited; and the question will be asked how far the Government have met objections to the original text of the Bill.

In trying to answer this question we are met at once by the difficulty that much that the MINISTER has proclaimed as his intention still finds no place in the Bill, and depends on the drafting of regulations. Part of the uneasiness of the profession has always come from the fact that the Bill is largely an enabling measure, allowing the present or a future Minister to make or to mar, to continue or to alter, the whole shape of the new service, by orders or regulations. The profession has pleaded that many matters which the Bill leaves to regulation would be better settled now and defined in the Act. It was felt, for example, that the composition of the regional board would be better laid down definitely in a form that would ensure a permanent unalterable balance between the groups of members drawn from different sources. Mr. BEVAN resisted this suggestion, as he did almost all others that sought to limit the power of the Ministry to adapt the future service as future needs dictate. Early in the debate he showed his determination to keep the Bill as flexible, and as adaptable to changing conditions, as could be. "The more," he said, "that we put into this Bill of a defining character, the less elastic, the less resilient, the service will become." To this attitude he adhered throughout the twenty days, with the result that the main framework of the Bill remains much as it was, still waiting to be clothed by regulations whose exact wording will probably not be known for some months. We may, however, take some comfort from the MINISTER'S repeated indication that in the framing of regulations there will be consultation with professional and other interested bodies, and his specific statement that the Central Health Services Council can review "any regulation the Minister proposes to make, and advise him upon it, on its own initiative." Though the large majority of the regulations will be the subject only of "negative resolution" in the House—i.e., they will have the immediate force of law unless a member successfully moves a prayer against them—it was agreed that some few which have particular financial or controversial implications might be made to require an "affirmative resolution." Among these will probably be those defining the constitution and geographical extent of the proposed regional areas. This is an important concession, because it will enable the merits of any proposed division to be debated before parliamentary approval is given; and it is doubly important in view of the growing recognition of the danger that hospital management will be overcentralised if the regions are made too few, and so too large and unwieldy.

On the general-practitioner services three main objections to the Bill were raised by professional bodies: they disapproved of payment by salary, of abolition of the purchase of practices, and of the so-called direction of doctors. On none of these points has Mr. BEVAN appreciably moved from the position he took up in the debate on the second reading. What he has evidently tried to do is to make sure that the profession's worst fears of the cumulative effect of these three provisions will not be realised. On remuneration by salary he said:

> "I am firmly convinced that it is necessary to have an element of basic salary in the doctors' remuneration."
>
> "There will be circumstances where it will be necessary to weight the basic salary to get sufficient doctors into under-doctored areas."
>
> "At the same time, I have accepted the proposition that a full salaried service is not reasonable, and in existing conditions would not operate to the best advantage of the community."
>
> "I found it very difficult to reconcile the free choice of doctor with the complete abolition of capitation."
>
> "Therefore, most unusually for me, I reached what I think was an ingenious compromise between the two principles. . . . It is an attempt to introduce into the system two desirable elements—the element of security for the individual, and the element of competition in order to sweeten and refresh the service."

These quotations make his attitude clear; and his arguments evidently satisfied his own supporters, who rejected an Opposition amendment that payment should ordinarily be by capitation alone. We must expect this verdict to be endorsed by the parliamentary majority, and the profession will therefore have to ask itself soon whether Mr. BEVAN'S "ingenious compromise" can be made a sound foundation for the new service.

The main objection raised to the basic salary has been that, taken with the abolition of the purchase of practices, it would lead inevitably to bureaucratic decisions on where any new entrant to medicine should be allowed to practise. Mr. BEVAN has not denied that he wants to be able to prevent new members of the public service from settling in areas already more than well provided, but he makes it clear that the decision as to which areas shall from time to time be held to require no more doctors shall be made only on the advice of a predominantly professional body—the Medical Practices Committee. He has also now recognised that, when a new doctor is to be selected for an area, the doctors already

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in practice in that area should have "some chance of determining their new colleague." To this end he suggests that the appointment shall be made by the local executive council after hearing recommendations from the local medical committee. "So we get three things we are anxious to keep. We get the doctors themselves influencing the appointment of their new colleagues; we get the local executive which is going to have the supervision of the medical service in that area, appointing; and we get the central committee" (the Medical Practices Committee) "confirming the appointment." To this end a new section has been added to clause 34.

In clause 35 (the so-called penal clause) the MINISTER, while insisting that he must retain the sanctions against the hidden sale of goodwill once compensation has been allocated, nevertheless agreed to meet the risk that practitioners making bona-fide contracts of partnership or assistantship might find themselves transgressing the law, and so becoming liable to severe penalties. He therefore proposed—and the committee agreed—to add new subsections to this clause, the effect of which will be to let practitioners report to, and register with, the Medical Practices Committee any agreements they propose making. If that committee agrees that the contract is a legitimate one, the parties will be protected against any subsequent suggestion that they sought in any clandestine way to sell or purchase practice goodwill.

Once again we find Mr. BEVAN refusing to abandon the principles on which he built his Bill, yet endeavouring to convince Parliament that his proposals will not be allowed to operate with injustice. The profession, while appreciative of his intentions, and of the few liberalising changes that have been made, will be disappointed that more alterations could not have been accepted in the text. Further changes in the Bill itself are scarcely likely to be numerous. We shall, however, hope to see the MINISTER's assurances, on so many matters, translated into regulations at an early date.

Gloom about Babies

HOWEVER attractive may be the prospect of a Britain with a population of 30 million instead of 45 million, we cannot scale down our present population without risk of hardship and unpleasantness. Moreover, a decline, once in motion, will tend to be self-perpetuating. These facts are heavily underlined in P.E.P.'s third broadsheet on population problems,[1] which sets out to assess the effects of declining numbers on Britain's future place in the world. This analysis suggests that if pre-war fertility trends are maintained we shall be faced, from about 1970 onwards, with "a Britain shrinking within its skin, becoming too small for its buildings, its equipment, its responsibilities, becoming on the average very much older in years though perhaps not proportionally so much older in health, a society of families of one or two, whose children miss the advantages of growing up with several brothers and sisters, a society tending to become stuck in the rut of decline." The writers argue that the economic effects, especially after 1970, will be harmful, and that "even a comparatively small drop" in numbers would "gravely weaken" Britain's position in the world. All this may indeed be true. Nevertheless the views expressed on the economic and international issues are not accepted by all who are thinking about the problem. A little more wisdom about the international control of atomic energy, and a little less fuss about national sovereignty, would certainly have more influence in determining Britain's status in the world than the loss of a million or so old people. Moreover, married couples cannot be frightened into having babies, and will seldom be moved by arguments about a weakening in the nation's position. Gloom also can be self-perpetuating, and propaganda based on fear is liable to defeat its own ends by destroying confidence in the future.

Pessimism is partly justified, however, by the general lack of interest in this important subject. Even our Governments, though a Royal Commission was appointed over two years ago, have shown few signs of taking the population situation into account when framing social policies. While tenders are being approved for dwellings for old people, no new houses with more than three bedrooms are being built; the New Towns Bill has nothing to say about it; no consideration seems to have been given to the question of rents and family size; the day-nursery grant from the Exchequer has been halved; the revised arrangements for Service pay abolish children's allowances, so that in future the married man (whether colonel or private) with four children will get exactly the same as those without children; the higher earned-income allowance for married women further widens the economic gap between married couples with and without children; while no-one apparently has thought of early payment of post-war credits to families with three or more children as well as to old people. A catalogue of this kind, after the net reproduction-rate has been below unity for 23 years, does not substantiate the view that the country is population-conscious. If Governments are to be persuaded to take an interest in the social process more than five years ahead, population research will have to concentrate more on current fertility patterns and the investigation of incentives and deterrents to parenthood.

Professor BAIRD's researches in Aberdeen, recorded on another page, show how badly we need national statistics on current reproductive behaviour. He finds in his nursing-home group, corresponding to the Registrar-General's social classes I and II, a large proportion of late marriages, no prenuptial conceptions, and very small families. On the other hand, in the booked hospital cases (social classes III–V) a proportion of women were pregnant before marriage, married before the age of twenty, and had very large families. In a further group of 2100 women of the same social class delivered under the domiciliary scheme, 18·4% had had more than five children, while there were 4·8% with nine or more. Such figures indicate great variation in the distribution of family sizes, and taken in conjunction with a background of poverty, ill health, and ignorance raise eugenic questions. BAIRD finds that these large families are almost all produced by women who seem incapable of planning their lives; everything, in fact, seems haphazard from the first conception before they are married in their teens.

1. Population: a Challenge and a Choice. Broadsheet no. 251, June 14, 1946. Previous broadsheets (nos. 241 and 242) were published on Nov. 9 and Dec. 7, 1945; see *Lancet*, Jan. 12, 1946, p. 59.

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In a lecture which we published on June 22 Dr. A. S. PARKES, also discussing the qualitative aspect of differential fertility, concluded that there is now no weeding-out by death of bad stocks.

At the beginning of this century there was undoubtedly a large "fertility differential" between clearly defined social groups. But is there today? To what extent are the Aberdeen figures true of the rest of Scotland, or applicable to England and Wales? The trouble about fertility data derived from records of confinements, valuable though they are in many respects, is that they are biased by selection. Only the women who have babies during the few years under observation, and especially those with frequent child-bearing histories, appear in the tables. Those who are childless, or who have long intervals between their pregnancies, escape analysis. It has also to be remembered that many of the mothers in Aberdeen with more than five confinements were born before the first world war, and in their reproductive habits reflect an attitude towards sex and childbearing which belongs to a generation that is passing away. We should like to know whether women who conceived before an early marriage in the last 5–10 years are behaving in the same way, and whether the numerical importance of this group and its contribution to future society is larger or smaller than it used to be. The 1943 report of the Registrar-General for Scotland shows, since 1939, an increase in the number of first and second children but a considerable decline in the number and proportion of fourth-plus children. Until, however, we have the report of the Royal Commission's family census no conclusive answers can be given to the many questions concerning contemporary reproductive trends.

Reconstructive Surgery of the Hand

WHEN the late war started, much of our knowledge of reconstructive surgery of the hand was based on the pioneer work of Dr. STERLING BUNNELL, of San Francisco. During the past two years, as consultant in hand injuries to the U.S. secretary for war, Dr. BUNNELL has supervised the treatment of the 20,000 soldiers with hand wounds who have returned to America. In his two recent talks, at Guy's Hospital and at the Royal Society of Medicine, he could therefore describe how the U.S. Army organisation for the care of complex hand injuries was evolved, and the principles on which it works. The repair of the hand extends into the domains of plastic surgeon, orthopædic surgeon, and neurosurgeon; but the hand is too small for three surgeons to use it as their operative field without destroying its function with scar tissue. The need for "composite specialists," working in centres with highly trained teams, was therefore clear when vast numbers of hand wounds demanded attention. The surgeons chosen for the charge of hand centres were men who had some experience of all three specialties and were of an ingenious turn of mind. Nine hand centres, each with 200–300 beds, were organised under Dr. BUNNELL, and were placed in the same general hospitals as the plastic and orthopædic units with which they were to coöperate. The hand extends "mechanically to the elbow and dynamically to the opposite cerebral cortex," so the hand centres treat any wound of the forearm producing a major disability of the hand, and have a consultative interest in brachial plexus and brain injuries leading to loss of function of the hand.

In summarising the principles of treatment adopted at the centres, Dr. BUNNELL urged the necessity for preliminary excision of scars and their replacement by well-vascularised tissue to ensure adequate nutrition of the part, if nerve and tendon grafts are to be successful. A scar of wrist or palm involving only a third of its circumference can so compress the vessels as to produce cold blue digits and an operative field quite unsuitable for reparative work. The replacement of this scar by vascular tissue (by tube-pedicle or flap graft) lets the hand "breathe and bloom again." In repairs of cover loss by free grafts, it is the borders of the grafts which are important, for it is along these borders that contraction occurs and limits mobility. The edges of a graft should never be parallel to the webs of the fingers but should extend in a V into the palm or on to the dorsum. On the back of the hand the margins of free grafts should be zigzagged, so that the "border scar" will not limit opposition of the thumb. On the backs of digits enough skin should be excised for the edges of the free grafts to lie along the mid-lateral lines; if the edges lie in front of or behind this plane they hypertrophy and limit movement. In direct pedicle-flap repairs to the hand the base of the pedicle as well as the secondary defect should be sealed with a free graft; if this pedicle base is left raw, lymph pours from it into the hand and can stiffen the digits in the two or three weeks during which the hand is attached to the pedicle. In the repair of divided nerves, Dr. BUNNELL reports successful approximations of median and ulnar nerves over gaps of 5 inches; after these operations flexion of the arm-joints is strictly maintained for four weeks. For nerve grafts he has used two or three thin cable grafts for both median and ulnar nerves; thick grafts tend to produce central necrosis of the nerve. Divided digital nerves should be sutured whenever possible, and regeneration at the rate of a phalanx a month is obtained in most cases; Davis and Geck suture silk is used for this work.

For tendon repairs Dr. BUNNELL uses a stainless steel pull-out suture. "The suture material which causes the least reaction," he says, "is that which is not there." If tendon suture between the distal palmar crease and the mid-volar creases—"no-man's land"—is to succeed, some special points must be attended to, such as the provision of room for reactionary expansion of the sutured tendon by excising the sublimis and incising the fibrous theca at the site of the proximal pulley. Tendon grafts, like nerve grafts, must be thin if they are to be vascularised and live. The tendons of palmaris longus and the long extensors of the toes are suitable for grafts. The restoration of function by tendon redistribution in ulnar palsies is done by using the sublimis to replace the lumbricals; the extensor proprius can be made to provide abduction of the index. In median palsies a tendon sling across the palm to which a flexor tendon is attached will produce opposition of the thumb. For repairs of the metacarpals iliac medulla has been used; these grafts are fixed by Kirschner wires which are removed later, their ends being buried subcutaneously while they are in place. When digits and metacarpals are missing, a remaining metacarpal can

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be "jogged" into the site of an absent and more essential one. When the skin envelope is tight, excision of the metacarpal of a missing or useless digit will provide breathing room for the rest. Where digits have been lost, osteotomies may be needed to produce opposition and maximum function of the remaining digits. Dr. BUNNELL emphasised the value of capsulotomy in the relief of stiff metacarpophalangeal joints. He noted too the value of a graft of the metatarsal heads to replace a shattered metacarpal head when metacarpophalangeal joints are ankylosed. Speaking of priorities in hand and arm surgery, Dr. BUNNELL urged that nerve repairs should not be deferred until bony continuity is established, but that the nerves to the hand should be repaired as soon as there is covering tissue of good nutrition—at or even before the time when the humerus or forearm bones are grafted.

Many of these lessons conform to British surgical practice, but Dr. BUNNELL's experience of hand injuries is unique, so it was natural that both the emphasis and some of the details of the picture he presented were new to his audiences. Particularly noteworthy was his insistence on the routine repair of divided digital nerves, and his demonstration of the value of metacarpal surgery, and of tendon and muscle redistributions in ulnar and median palsies. In this department of surgery the U.S. Army hand centres set the standard for the world today, and on the recommendation of Sir HAROLD GILLIES plastic and orthopædic surgeons of the British Army have already been sent to observe their methods. Dr. BUNNELL went far towards convincing his many hearers that in our own hand injuries the best results can only be obtained by the establishment of one or more special hand centres in this country.

Annotations

PATHOLOGICAL SOCIETY OF LONDON

IN 1846 this society was founded by a group of doctors who were particularly interested in pathological studies, and over 100 members were enrolled. By the following year the membership had risen to 130, and during the next sixty years the society's early promise was amply confirmed by the contributions of men like Bright, Hodgkin, Paget, Quain, and Wilkes.

When the Royal Society of Medicine was formed in 1907, the Pathological Society of London became its pathological section; and on Tuesday of last week the section celebrated its centenary. The guests were received by Sir Henry Tidy (on behalf of the president of the society), and by Prof. W. G. Barnard, president of the section. An account of the steady and continuous progress made in the years before amalgamation was given by Prof. H. R. Dean. Prof. G. R. Cameron, who spoke on cellular pathology, recalled the concern of the early investigators with the nature of protoplasm as well as with the cell unit; he predicted that, just as the cellular theory of Virchow had provided a new conception, so now the study of protoplasm would probably provide an equally radical advance in our knowledge of life and pathology. He was followed by Sir Paul Fildes, who described with subtle humour the change in the bacteriologist's status from technician and servant of the clinician to colleague of equal standing. He indicated bacteriology's dual function—the study of bacteria for their own sakes and, arising from this, the combating of bacteria in the body. Prof. E. C. Dodds gave a stimulating account of the relationship between chemistry and pathology, and made a plea for the closer integration of chemistry in medicine. In the last address, Prof. James McIntosh said that progress in the study of viruses, the youngest branch of pathology, had equalled that in other branches.

Those admitted to honorary membership of the section in connexion with the celebration were: Sir Lenthal Cheatle, Prof. H. R. Dean, Sir Paul Fildes, Sir Alexander Fleming, Dr. H. Morley Fletcher, Dr. W. E. Gye, Sir Gowland Hopkins, Prof. E. L. Kennaway, Prof. James McIntosh, Sir Charles Martin, Sir Robert Muir, Dr. J. A. Murray, Sir Charles Sherrington, Prof. M. J. Stewart, Prof. H. M. Turnbull, Dr. Arthur Whitfield, and Sir Almroth Wright.

FLUIDS IN HEART-FAILURE

THE traditional diet in congestive heart-failure is low in sodium with a restricted fluid intake, but White and colleagues[1] now recommend a low-sodium diet with ample fluids. Their thesis is that, provided the sodium intake is low enough, fluid will not be retained, and that a free fluid intake not only saves the patient from discomfort but may also aid renal function. They claim that such a régime sometimes controls œdema more efficiently than the usual diuretics. Of 64 patients treated on these lines, 17 obtained much benefit, 15 moderate benefit, 8 slight benefit, and 7 no benefit; the remaining 17 either defaulted or supplied insufficient data. The diet used contained 700 mg. of sodium (equivalent to 1·75 g. of sodium chloride) in an amount of food equivalent to 1800 calories, and the patients were allowed to take water freely. No salt or soda was allowed in cooking or at table; no salt substitute could be taken that contained sodium; butter was unsalted; and bread and salad dressings were salt-free. Ammonium chloride sprinkled on the food was allowed if the patient found the food "too flat."

On theoretical grounds there is much to be said for this régime, provided the other recognised measures for treating congestive failure are applied. But the diet is extremely dull, as anyone who has sampled salt-free bread, for instance, will agree, and it is doubtful whether many households in this country, even in normal times, could undertake it. In hospital it may be another matter, but even there the emotional effect of such a diet must be considerable, and its use savours of treating the disease rather than the patient. For most cases of congestive failure physicians will probably prefer a moderate restriction of fluid intake, combined with the maximum restriction of sodium intake compatible with a diet that is both attractive to the patient and easily prepared—and incidentally one containing as much protein as the patient can digest. This régime, coupled with rest, digitalis, and mercurial diuretics, will give the best results in the great majority of patients. In the minority who do not respond, a strictly controlled sodium intake with free fluid is worthy of trial.

WORK OF THE NUFFIELD FOUNDATION

THE first report of the Nuffield Foundation—discursive, intimate, and handsomely printed on thick paper—is a shock to the careful habits which seven years of war and peace have bred in us. But trans-Atlantic broadcasters continually remind us that we have forgotten how to enjoy ourselves; and perhaps an occasional example of good production may guide us towards a gentle frivolity, much as the fast of Lent used to be broken with an egg.

The trustees, under the chairmanship of Sir William Goodenough, have a wide range of useful work to discuss. When, in 1943, Lord Nuffield established the foundation, and endowed it with £10,000,000 of Morris Motors stock, he had three main objects—the advancement of health and the prevention and relief of sickness, the advance-

1. Bridges, W. C., Wheeler, E. O., White, P. D. *New Engl. J. Med.* 1946, **234**, 573.

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ment of social well-being, and the care and comfort of the aged poor. The trustees have seen it as a healthy duty on those responsible for dispensing private funds "to accept risks which cannot be proper to those accountable for the taxpayers' money." This, of course, is in the true voluntary tradition. They have decided to follow the American plan of making grants for a limited period to schemes which the foundation initiates (though they will continue, after that, to take an interest in other ways): the aim being to stimulate local or general enterprise, and so widen the health services steadily. They plan to work in five-year periods, the programme for the years 1944–45 to 1949–50 covering five main fields—the medical, natural, and social sciences, fellowships and awards, and the care of the aged poor. The total grants made during the first three years of their activities have amounted to £882,820.

In the medical sciences grants have been made towards child health, and industrial and dental health. The trustees helped London University to found the new institute of child health, contributing £100,000 (payable in instalments over ten years) to the endowment of the professorship now held by Dr. Alan Moncrieff. Great Britain has lagged behind some other countries in providing training in industrial health; early in 1944 the trustees offered to coöperate in the plans of the universities of Durham, Glasgow, and Manchester for founding departments for its study, and gave substantial grants to all three. The new departments are to work in association not only with the Ministry of Labour and with the Industrial Health Research Board but also with local industries, and with the university organisations for the study of social medicine. At Manchester and Glasgow the heads of the departments will also hold consultative appointments in local industry. Other grants have been promised towards a project for an industrial health, general reablement, and research service at Slough. This will be under the direction of a well-qualified and experienced doctor, and will include an industrial health centre giving expert advice on working conditions in factories and workshops, a casualty clinic, an outpatient reablement department, a remedial workshop, and a research department. The staff will be able to examine the best ways of providing an industrial health service for small firms which cannot afford to employ doctors and nurses of their own. To forward dental health the trustees have made grants of £25,000, spread over ten years, to the Sutherland dental school of Durham University to meet the salary of a whole-time lecturer in physiology and the costs of a professorial department of oral medicine which is about to be established. Guy's Hospital dental school is receiving a similar grant, to found a department of medicine to study diseases of the mouth and their local and general effects. A lecturer with scientific and laboratory training is to be appointed at Leeds University school of dentistry, and at Manchester a grant is being given towards the cost of a department of preventive dentistry and research. Other projects under this heading include grants to the Nuffield laboratory of ophthalmology at Oxford, and to Manchester University for the study of nasal catarrh.

The policy of the trustees towards the aged poor is practical and optimistic. They remark that, as machines continue to replace muscles, the possibilities of living a useful and self-supporting life when well stricken in years are steadily improving. A committee to survey the problems of ageing and of care of the aged was appointed under the chairmanship of Mr. Seebohm Rowntree and is expected to report soon. Meanwhile, grants have been made to Cambridge for a study of the causes and results of ageing, and an inquiry to decide how the middle-aged and elderly learn, and what they are capable of learning. It seems likely that our generation, after a hard-working childhood and a laborious youth and middle life, is in for a busy old age; but as the trustees rightly hold, this will bring new hope and purpose to all who are reluctant to become a burden.

In the natural sciences, grants have been made to the universities of Birmingham, Glasgow, Manchester, Oxford, and Cambridge, and to Birkbeck College of London University, for researches into molecular and atomic problems of physics, protein and virus molecules, cosmic rays, astrophysics, metallurgy, and agriculture. Social sciences are being encouraged by grants to the National Institute of Economic and Social Research, and the Population Investigation Committee. If a National Administrative Staff College is founded, to investigate and explain principles and techniques of organisation, administration, and leadership in civil life, the foundation will offer scholarships to students of merit who need assistance to attend the college. Among other scholarships and awards are Nuffield medical fellowships to train teachers and research-workers in preventive medicine; and dental fellowships and scholarships to enable selected qualified dentists to take additional training to fit them for an academic career and for research, and scholarships for dental students of high ability who wish to spend a longer time in scientific study. Medical travelling fellowships are offered to doctors in the Dominions who wish to come over for postgraduate training.

DIABETIC PLEURISY

EVERY medical student knows that respiratory infections can precipitate diabetic coma, and that diabetics show an increased liability to pulmonary tuberculosis. A complication has now been introduced by Armanino and Ory [1] who have observed five diabetic patients in coma or "pre-coma" in whom "pleurisy" seems to have arisen merely from dehydration. In all of them pleural friction was detected low down in the axillæ, and otherwise no radiological or clinical evidence of pleural or pulmonary infection could be found except in one where there were radiological signs of early pneumonia on the opposite side to the rub. The friction sounds disappeared rapidly with the administration of fluids, and so did the leucocytosis present in some of the cases. It is certainly conceivable that dryness of the pleura could produce a rub, and this view is supported by Davis's [2] findings in dogs; among the changes produced by severe dehydration was a dulling of the surfaces of the pleura, which were covered with fibrin. The abdominal pain of which patients in diabetic pre-coma sometimes complain may even be referred from the pleura, if this type of pleurisy turns out to be at all common. But the clinician will be chary in diagnosing diabetic pleurisy until he has convincingly excluded other possible causes, especially tuberculosis.

CHEMICAL COMPETITION

LECTURING to postgraduates in Edinburgh on June 4, Mr. W. O. Kermack, D.SC., described how molecules compete with one another for combination with a third, and quoted examples of simple competition in vivo, such as the fixation of calcium by oxalates and the affinity of carbon monoxide for hæmoglobin in competition with oxygen. The action of physostigmine and 'Prostigmin' represents a competitive interference with the effect of choline esterase on its substrate acetylcholine so that the action of the latter is made more manifest. Amphetamine probably stimulates cerebral activity by inhibiting the enzyme amine oxidase through substrate competition, thus preventing the formation of toxic aldehydes in the brain. This same enzyme also destroys adrenaline, an action which is prevented by ephedrine which then competes for tissue receptors with the adrenaline it has preserved and so modifies its action.

1. Armanino, L. P., Ory, E. M. *Amer. J. med. Sci.* 1946, **211**, 597.
2. Davis, H. A. *Arch. Surg., Chicago*, 1941, **42**, 939.

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Competition has recently been made use of in the production of British anti-lewisite (B.A.L.), which prevents combination between the trivalent arsenical vesicant, lewisite, and tissue sulphide groups; it can also recapture arsenicals and mercury from the body tissues and so may be effective in the treatment of arsenical and mercurial poisoning.

In the field of immunology, Landsteiner found that proteins modified by the introduction of certain chemical groups could be used as antigens to produce antibodies specific to the chemical group concerned. The reaction between the modified protein and its antibody could then be competitively inhibited by the presence of the chemical originally combined with the protein. Harington produced a thyroxine antibody and an anti-aspirin serum which could nullify the effects of these drugs in vivo.

The principle of chemical competition is important in chemotherapy. The sulphonamides compete in cell metabolism with *p*-aminobenzoic acid and so displace this essential bacterial metabolite from its proper rôle. Various components of the vitamin-B complex are essential growth factors for many organisms. When the molecules of these substances are suitably modified, the resulting compounds inhibit the growth factors by chemical competition and so act as antagonists to bacterial growth. These substances often fail as chemotherapeutic agents because, being based on vitamins required for the host, they may prove as toxic to the patient as to the parasites. To be of value in practical chemotherapy a chemical agent must be selectively antagonistic towards an essential metabolite of the micro-organism it is to attack but inactive against the factors essential to the normal physiological processes of the host.

MALARIA IN BRIEF

THE need for speedy restoration and development of the tropical territories ravaged during the war, or forced into unproductive idleness, is obvious to all. The military successes in the Mediterranean and in the Far East could scarcely have been attained but for the forethought devoted to the physical welfare of the troops, and the operations in these areas have proved yet again that maintenance of health is necessary to the successful use of labour forces there, whether in a military or in a commercial capacity.

The conditions of existence of the indigenous inhabitants of the more remote parts of the tropical world are by modern standards poor. Of the many diseases prevalent the most important is malaria, and employers of labour in the tropics are belatedly becoming aware that it must be controlled for commercial if no other reasons. The war years have seen substantial advances in technique, and in an authoritative booklet Dr. G. Macdonald, director of the Ross Institute, gives an account of modern methods of defence against the disease.[1] He is writing primarily for planters, miners, and others responsible for managing labour in Malaya, but the information is applicable equally to other malarious areas and will be helpful to doctors as well as laymen. In some sixty pages he gives a general account of the various types of malaria, of their mode of development and spread, and of the factors governing their incidence, and sets out the principles of control. Information on simple methods of determining the incidence, and the significance of this in forecasting morbidity-rates in newcomers to the area, leads to advice on the selection of sites for houses and labour camps and on measures of personal and communal protection against infection. Detailed instructions are given on controlling the mosquito population by engineering works, by chemical poisoning, by naturalistic means, and by taking care not to create breeding-places; and notes are added on the preparation of an insecticidal spray, and the properties and constitution of D.D.T.

1. Notes on Malaria and its Control for Planters and Miners. Published under the authority of the Ross Institute Industrial Advisory Committee by the Malayan Chamber of Mines (Incorporated) and the Rubber Growers' Association (Incorporated), April, 1946. Pp. 61.

MENTAL HEALTH IN AMERICA

A NEW National Mental Health Bill, now under discussion in the United States, provides for setting up a national psychiatric institute, and allocates 10 million dollars yearly for grants in aid of research to universities, hospitals, laboratories, and other public and private institutions, and to individuals. A press statement from the New York Academy of Medicine argues that the new institute should not be isolated, either geographically or intellectually, but should be placed near a city where the staff could have the benefit of exchanging ideas with other workers. Discharged inpatients should become outpatients, the course of their illness being thoroughly studied and followed up; and the same psychiatrists who treat them while they are in hospital must be able to watch them as outpatients. It is also felt that the institute should be of a moderate size; in very large institutions maintenance is costly and investigation may be hampered. Moreover a rapid turnover of patients is inadvisable, since "more can be learned from a careful long-term study of a small group of patients than from a more superficial study of great numbers." Doctors chosen for psychiatric training in the new institute are to be selected with great care, in the hope that they will later raise the level of psychiatry throughout the country. At present psychiatric clinics, both for children and adults, are relatively scarce even in the large cities of the United States, and psychiatric training in medical schools is as perfunctory as it is in many British schools: the student spends a few hours in the wards of an institution for psychotics, and that is all. It is hoped that the Bill will ensure proper teaching on the emotional conflicts which are bound up with so many illnesses.

SERVICE PAY

THE new scales of pay for Service doctors, reported on p. 66, contain slight but notable advances on the present basic rates. The innovation of uniform remuneration for equivalent ranks in all three Services is welcome, as is the upward grading of pay in the early years with increasing service, and independent of promotion. The specialist, whose case is still under consideration, needs perhaps no special plea, the Services having shown increasing awareness of the need to attract this class of doctor and to nurture the potential specialists in their ranks. But some assurance that, for others, special aptitude or industry will receive its due reward would be welcome. It has long been a common complaint of officers in the peace-time Services that, whatever their merit, promotion in the junior ranks is too often dictated by length of service only, and that thereafter advancement depends largely on seniority and the varying chances of vacancies on the establishment.

Sir AMBROSE WOODALL, F.R.C.S., who received a peerage on the King's Birthday, has taken the title of Baron Uvedale of North End.

WE regret to record that Dr. T. Izod Bennett, physician to the Middlesex Hospital, died on Wednesday last.

IT is announced that Lord Horder is to advise the flour-milling industry on medical and nutritional matters concerning flour and bread. He will join a team of advisers which includes Prof. E. C. Dodds, F.R.S., director of the Courtauld Institute of Biochemistry, Middlesex Hospital, and Mr. T. Moran, D.SC., director of the British Flour Millers' Cereals Research Station at St. Albans.

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Special Articles

ROYAL SOCIETY EMPIRE SCIENTIFIC CONFERENCE

AT the first morning session of the conference on July 3, held in Oxford, the subject for discussion was

Nutrition

Prof. R. A. PETERS, F.R.S., who was in the chair, quoted an article submitted by Dr. L. B. Pett which pointed out that "the nutrition problem is a medical one consisting in the diagnosis of those individuals who could benefit by improved dietaries. The solution of the problem is providing these people with the information about, and the means of obtaining, the necessary diets. In fact, however, there is still no sure way of diagnosing much of the malnutrition that may exist. . . . Under these circumstances it is understandable that the nutrition problem is still one of research on the one hand and of rather general public-health measures aimed at prevention on the other." Dr. Pett had called attention to the need for further research on nutrition in Canada, and for better coördination among those engaged on such research.

MALNUTRITION IN THE COLONIES

Dr. B. S. PLATT (London) discussed the nutritional studies of the indigenous peoples of the Colonies. It had been thought necessary to find out whether a nutritional problem existed among the Colonial peoples, and for this there were two main methods: (1) data on nutriture could be obtained from clinical observations and from relevant vital statistics; (2) data on food-consumption could be obtained from information concerning food-production and importation, or from dietary surveys. Once the problem had been defined it was necessary to plan improvements and decide how the resources of land and labour could best be used to secure improved nutrition. This attack involved such matters as health, soil fertility, water-supplies, food technology, education, and administration, so any plan for improvement must be a combined operation. This combined effort could best be achieved through a local nutrition committee, with a technical staff coöperating to implement its scientific food policy. As a step towards assisting Colonial governments in this, ten dietists had already been trained to provide technical and other assistance to such committees. To illustrate the existence of malnutrition, Dr. Platt reviewed the work published since 1936. Many of the problems of malnutrition were of long standing, but not all; thus in Basutoland 967 cases of pellagra were reported in 1943, but this appeared to be a new disease in the territory, associated with a new method of milling. Pellagra is a troublesome problem in Hong-Kong, Nigeria, and the Gold Coast. Beriberi is still a common disease and cause of death in Hong-Kong and Malaya; in 1940 it was responsible for no less than 7229 deaths in Hong-Kong. Apart from these and other classical nutritional deficiencies, diseases partly attributable to malnutrition are frequent, including tropical ulcer and toxæmia of pregnancy. One of the clearest indications of the dependence of the infant's nutrition on the nutrition of the mother during pregnancy was the relationship of birth-weight to the total protein in the mother's diet during pregnancy. In some Colonies the average birth-weight increases with the social status of the mother. Infant nutrition in Colonial territories would be a profitable subject for research, and a start on these lines had already been made in the West Indies. The organisations that should be concerned in a nutrition programme in the Colonies, totalling about 15, included the Medical Research Council and the Colonial Office, with the Colonial Medical Research Committee linking them and acting through a subcommittee on nutrition. This subcommittee acted on the one hand through a field research station, and on the other through the Colonial territory staff, who included the 10 trained dietists already mentioned. The field research station was linked to the human nutrition research unit and to a field working party. The importance of research into Colonial nutrition problems needed no emphasis.

SOUTH AFRICA

Dr. E. H. CLUVER, director of the South African Institute for Medical Research, pointed out that malnutrition was rife throughout Africa. Since tropical disorders of all kinds could be found in almost all parts of the continent, the ætiology of African nutritional disease was complex and its elucidation was very much a thing of the future. It was wrong to suppose that only further advances in fundamental knowledge were necessary—a more intensive study must be made of the application of such theories to the conditions among the different areas and races of Africa. Starvation occurred only rarely, but when found it caused even parliamentarians to react; the main problem however was one of unbalanced diet containing excess starch. In 1928 a commission of investigation had been set up by the government to investigate the problem of substandard Europeans and South Africans, usually referred to as "poor whites." These persons were unemployable because of their poor state of health, partly due to malnutrition. The problem was not only confined to "poor whites," and a nutrition council had been set up by parliament to define the whole problem. In 1928 pellagra had been reported in a Durban prison and cured by adding yeast to the diet. For many years scurvy had occurred in gold-miners put to work underground. Although there were 11 million Africans in the Union it was not possible to recruit from these the 250,000 that were needed for the gold-mines, because of their poor physique; more than half had to be recruited from outside the Union. A few years ago the Union health department of South Africa provided funds for the Cape Nutrition Survey, whose primary object was to establish reliable criteria for the recognition of human malnutrition. Coördination of this and other nutritional research in Africa should now be brought into effect. Existing knowledge should be applied and research extended; and it was essential to train a body of nutritional research scientists, adequate both in ability and numbers, to grapple with the vast unexplored problems that lie before us.

CEYLON

Prof. W. A. E. KARUNARATNE recalled that although malnutrition in Ceylon had had serious effects during the world economic depression of 1929–33, little or no attention was paid to the subject until Dr. Lucius Nicholls investigated phrynoderma in a Colombo jail; de Fonseca had already shown that this eruption reacted very favourably to cod-liver oil. It was soon recognised that other conditions caused by malnutrition were widely prevalent in Ceylon, and this led to a more elaborate nutritional survey undertaken by Nicholls in 1936. The defects caused by malnutrition were many, and included blindness; of 147 children in the blind school, more than 60% were blind as a result of keratomalacia due to severe deficiency of vitamin A. In a recent investigation in a large children's hospital in Colombo, Professor Fernando found that 72·9% of the children had clinical evidence of malnutrition, 16·1% having nutritional œdema. Rural dietary surveys conducted by Nicholls and Nimalasuriya in 1941 had also revealed a serious state of affairs. Since Ceylon is far from self-supporting in essential foodstuffs, a higher standard of nutrition demanded a greater development in agriculture and improvement in animal husbandry and fisheries. An appreciable increase in income was also essential. Other problems that would have to be taken into consideration included the extent of land that could be cultivated, the further development of irrigation, the prevalence of malnutrition, and the rapidly increasing population. In the last analysis, adequate nutrition is a matter of education and government.

DISCUSSION

Sir JOSEPH BARCROFT, F.R.S., reminded the meeting that agriculture had been defined as the science of getting more human food from a given number of acres, and that the late Lord Keynes had suggested amending this to "a given number of acres and energy." The main problem was to link medicine and agriculture.

Khan Bahadur HUSAIN (India) regretted that soya beans had been discouraged in his country, since in his view they could contribute a great deal to Indian economy.

Dr. D. M. BLAIR (Southern Rhodesia) regretted that food crops had been improved from the economic point of view but not from the nutritional: natives previously grew millet which would not sell and now grew white maize.

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Prof. A. M. BLACKMAN (Oxford) stressed the importance of economics but believed there was no rational price for any crop.

Miss HARRIETTE CHICK, D.SC., gave an account of the work during the war of the Accessory Food Factors Committee of the Medical Research Council and the Lister Institute. Two tests on human requirements of vitamins A and C had vindicated the figures given by the League of Nations in 1937 rather than those of the National Research Council in 1941, which were three or four times higher. The committee had carefully considered the question of bread, and its two memoranda published early in the war had had a great effect on food policy.

PRACTICAL APPLICATION OF KNOWLEDGE

In opening the second session the CHAIRMAN said that the communications already delivered had clearly proved the existence of a nutrition problem in the Empire, and he regretted that many thousands of cases of beriberi occurred when synthetic vitamin B_1 was available in large amounts.

Mr. A. GLENDON HILL, PH.D., director of the East African Agricultural Research Institute, read a paper on the selection and improvement of food plants. He believed that one of the strongest arguments in favour of undertaking plant breeding at the earliest possible date was that it provided the only scientific method whereby increased crop yields per acre could be achieved without at the same time changing agricultural methods or making greater demands on the cultivator. But the shortage of plant breeders was likely to prove the main hindrance to progress for some time to come. The primary consideration was yield of food per acre and not per ton of produce. One of the first items in a programme of plant breeding should be a survey of the vast number of existing food-crop varieties in our Colonies, about which much had still to be learned.

Mr. HERBERT H. BROWN, PH.D., director of Fisheries Investigations, West Indies, discussed food available from Colonial fisheries; and Mr. R. DAUBNEY (East Africa) dealt with improvements necessary in animal husbandry.

Dr. G. A. C. HERKLOTS (Hong-Kong), who spoke with practical experience of malnutrition as a prisoner-of-war of the Japanese for nearly four years, wished to see the production of fish increased, but believed that the nutrition and happiness of the Chinese depended on the green vegetables they produced. He had introduced a new idea in Hong-Kong by starting a "balanced food factory." It was possible to obtain from this balanced meals and supplements such as enriched biscuits containing vitamins of the B complex, calcium, iron, and shark-liver oil. This practical note was continued by Colonel Sir S. S. SOKHEY, the only medical delegate from India, who wished to see direct lines of ways and means for putting into action our present knowledge; he was a little sceptical of Dr. Platt's diagram in which a large number of agencies were joined to one another in circles. He would have liked to break the circles and apply at once our present knowledge to feeding the people.

Sir EDWARD MELLANBY, F.R.S., reminded the meeting that in agriculture the farmer was in control, and in medicine the scientist was in control; coördination between the two was required. We could carry on independently of the agriculturists and had done so in the past with great effect—calcium, iron, and food yeast were examples—but such isolated action was not the true goal, and the problem of malnutrition must be tackled at once by a combination of the medical and agricultural scientists.

A NEW monthly journal, *Nutrition and Child Welfare*, should prove useful to those who have care of children, including health visitors, school nurses, midwives, nursery matrons, and nursery-school teachers. The first issue contains articles by Prof. Alan Moncrieff, Dr. Ursula Shelley, and Dr. R. P. Cook, as well as a discussion by Dr. G. E. Breen, the editor, on the pasteurisation of milk. This journal may well fill the place of *Maternity and Child Welfare*, which unfortunately came to an end in 1934—an informative little publication which could still provide a useful pattern in some respects. We wish Dr. Breen, and Miss Alma Fox, the nursing editor, success in this new venture.

THE WORLD HEALTH CONFERENCE

FROM OUR SPECIAL CORRESPONDENT IN NEW YORK

WITH the preliminaries of the first three days over,[1] the conference began its first full week of work on Monday, June 24, with the addition of delegations from the U.S.S.R., the Ukraine, and Byelo-Russia, an observer from Hungary, and three other delegations who had been delayed en route.

Five working subcommittees were set up, in accordance with the proposals of the expert committee in Paris—namely, on the scope and functions of the Organisation (chairman, Dr. Shousha Pasha, Egypt); on administration and finance (chairman, Dr. G. B. Chisholm, Canada); on legal questions (chairman, Dr. Karl Evang, Norway); on relationships with the United Nations and other organisations (chairman, Dr. A. Gabaldon, Venezuela); and on regional arrangements (chairman, Dr. W. Timmerman, Netherlands). In addition, a general or steering committee was set up to meet daily and control the work of the conference.

At the beginning of the week things moved very slowly and a great deal of time was lost in procedural details. Many of the delegates lacked experience, and their volubility was often in inverse ratio to the importance of the State they represented. Thus a delegate from a country with very recent and dubious claims to statehood distinguished himself by making three speeches followed by three retractions! Also the chairmen rightly felt that any limitation of the discussions might reduce the enthusiasm with which delegates would further the acceptance of the conclusions of the conference on their return home. A third cause of delay was an obvious failure of the secretariat in certain directions such as interpreters and distribution of documents; though this should be laid at the door of the U.N. secretariat rather than the ad-hoc conference secretariat under the direction of the secretary to conference, Dr. Yves Biraud.

However, a shade temperature of round 90° in the Bronx—"The only difference between New York in July and Hell is that the rent and humidity are higher in New York"—and the desire of delegates to get back to their posts within a reasonable time, led to a minor revolt in the middle of the week. The steering committee tightened things up and some real progress began to be apparent. By the end of the week it was at least clear what were the main subjects of disagreement, and that these broadly were the same as those disclosed in Paris. While it was generally conceded that membership should be open to all, the delegates from Russia expressed the hope that Spain, for instance, would not be admitted, and most delegates felt that responsibility for excluding any State should be placed on a political body such as the U.N. Assembly and that the Health Organisation should keep clear of politics. It was agreed that the governing body of W.H.O.—whose name was changed from "conference" to "assembly"—should be composed of three, not one, delegates, with alternates and advisers, and that these should "preferably" be drawn from the health authorities of their countries. A new point, as yet unsettled, was raised in a proposal that dependencies, such as colonies and trustee territories, should be admitted to the assembly as associate members: most delegates thought that this would make an already unwieldy body completely unworkable, and favoured representation of dependencies at the regional level. Views on the entry into force of the convention establishing the new World Health Organisation varied from a Yugoslav proposal that it should require ratification by 26 members of the United Nations to the original proposal in Paris for 15 signatures. The former proposition carried the day in committee, and it seems clear that an interim commission will have to be set up until such time as the permanent organisation is established.

As in Paris, the greatest difficulty arose on regional organisations and notably the position of the Pan-American Sanitary Bureau. The Latin American bloc refused to consider putting the bureau under the control of the new W.H.O., and the U.S. delegation felt bound to support this somewhat parochial view; but the question is still far from decided.

1. See *Lancet*, June 29, p. 970.

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Public Health

Salaries of Health Medical Officers

INTERIM REVISION OF ASKWITH SCALES

REPRESENTATIVES of the parties to the Askwith agreement on salaries met in London on March 26, and accepted an interim revision, whose terms have now been published.[1] The recommendations of the Askwith memorandum are to continue as an interim measure, with the following adjustments, dating from April 1, 1946, which are additional to any existing war bonus.

(*a*) Incremental scales (i.e., the rates of pay quoted in the memorandum for resident medical officers, medical officers employed in departments, senior medical officers, medical superintendents of institutions other than mental hospitals, and assistant medical officers to mental hospitals) shall be increased throughout the scale as follows:

(i) If the minimum of the scale does not exceed £700, by 30% of that minimum;

(ii) If the minimum of the scale exceeds £700 but does not exceed £1000, by 20% of that minimum;

(iii) If the minimum of the scale exceeds £1000, by 10% of that minimum.

The rate of pay of £1100 quoted in the memorandum as the rate not to be exceeded for senior medical officers or medical superintendents of institutions other than mental hospitals shall be increased by 10%.

(*b*) The minimum commencing salary of other rates of pay (i.e., for deputy or chief assistant medical officers of health, for medical officers of health, and for combined posts) shall be increased:

(i) If it does not exceed £700, by 30%.

(ii) If it exceeds £700 but does not exceed £1000, by 20%.

(iii) If it exceeds £1000, by 10%.

Medical officers already serving in posts covered by the Askwith memorandum on April 1, 1946:

(1) If they are in a post to which paragraph (*a*) above applies, and if they are receiving not more than the maximum of the present scale embodied in the Askwith memorandum, shall be given from that date an increase of pay equal to the appropriate percentage of the minimum of the present scale indicated in paragraphs (*a*) (i), (ii), or (iii), as the case may be; and if they are receiving a rate of pay in excess of that maximum but less than the maximum of the revised scale, shall be given an increase of pay which will bring them to the revised maximum.

(2) If they are in a post to which paragraph (*b*) above applies, and if their salary does not exceed the appropriate minimum embodied in the memorandum plus 20%, shall from that date have their salary increased by the appropriate percentage of the minimum indicated in paragraphs (*b*) (i), (ii), or (iii), as the case may be.

In respect of all categories, marginal adjustments shall be made to ensure that an officer shall not receive, as a result of the new arrangements, either less than an officer in a post to which at present a lower rate of pay applies, or less than he would have received had his rate of pay been lower than that which he at present receives. In cases where present salaries are such as to disqualify their recipients, either in whole or in part, from receipt of the salary increases now agreed, local authorities have discretion, in some cases with the consent of the Minister of Health, to review existing rates of remuneration.

EFFECT OF RECOMMENDATIONS

The following examples show increases of pay to which officers are automatically entitled under the new arrangements. Local authorities have discretion to pay higher rates in appropriate cases; but the new arrangements do not relieve certain local authorities of their responsibility for obtaining the approval of the Minister of Health to revised rates of pay.

Resident Medical Officers.—The minimum commencing salary (hitherto £350, rising by annual increments of £25 to £450 per annum) is to be £455, rising by annual increments of £25 to £555 per annum, with emoluments which shall include board, lodging, laundry, and attendance. Thus a salary of £400 on the old scale would be automatically increased to £505, and a salary of £500 (above old maximum) would be increased to £555 (new maximum), while a salary of £600 (above new maximum) would be subject to no automatic increase.

Medical Officers employed in departments.—The commencing salary is increased from £500 per annum to £650 per annum, rising by annual increments of £25 to a maximum of £850. A salary of £600 per annum on the old scale would thus be automatically increased to £750; and a salary of £800 (above old maximum) would be increased to £850 (new maximum).

Senior Medical Officers.—The minimum initial salary is to be increased from £750–£1100 to £900–£1210, with an increment of £50 every two years up to a maximum which shall be calculated by adding to the maximum of the old scale payable under the Askwith memorandum the appropriate percentage (in accordance with paragraph (*a*) (ii) or (iii) of the interim revision) of the minimum of the old scale; but no salary in this scale shall exceed £1210 per annum until 4–5 years after the maximum on the scale is reached, at which time the employing local authority shall consider whether the salary should be increased beyond the maximum.

Medical Superintendents of institutions other than mental hospitals.—By the new scale, the minimum is increased, for an institution not exceeding 150 beds, from £750 to £900–£1087 10*s.*; and corresponding increases are made for larger units. the minimum salary for units larger than 700 beds rising from £1100 to £1210. All officers receive every two years an increment of £50 to the specified maximum, but no salary shall exceed £1210 per annum except after 4-5 years on the maximum salary in the scale, when the employing local authority shall consider a further advance.

Deputy of Chief Assistant Medical Officers of Health.—The new minimum commencing salaries range, according to population, from £624 for a population not exceeding 50,000, to £1152 or £1200 for populations above 750,000.

Medical Officers of Health.—The increase is in the same proportion as for assistant medical officers of health.

Combined posts.—Where an assistant medical officer under a county council acts as a district medical officer (for either a single or combined district) for a definite proportion of his time, he shall receive by way of total salary not less than the minimum commencing salary of a whole-time medical officer of health, as indicated by the population of the district or combined district. The officer shall not in any case receive a salary of less than £960 per annum.

Assistant Medical Officers to mental hospitals.—The minimum commencing salary is increased from £350 to £455, rising by annual increments of £25 to £555 per annum, with emoluments which shall include board, lodging, laundry, and attendance. It is desirable that suitable provision should be made in connexion with every mental hospital for the accommodation of married assistant medical officers.

1. *Salaries of Whole-time Public Health Medical Officers: Interim Revision of Askwith Memorandum.* H.M. Stationery Office, 2*d.*

Infectious Disease in England and Wales

WEEK ENDED JUNE 29

Notifications.—Infectious disease: smallpox, 0; scarlet fever, 1063; whooping-cough, 2073; diphtheria, 313; paratyphoid, 9; typhoid, 6; measles (excluding rubella), 4177; pneumonia (primary or influenzal), 440; cerebrospinal fever, 39; poliomyelitis, 8; polioencephalitis, 0; encephalitis lethargica, 3; dysentery, 123; puerperal pyrexia, 125; ophthalmia neonatorum, 70. No case of cholera or typhus was notified during the week.

Deaths.—In 126 great towns there were no deaths from enteric fever or scarlet fever, 1 (1) from measles, 7 (2) from whooping-cough, 2 (2) from diphtheria, 42 (9) from diarrhœa and enteritis under two years, and 5 (2) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 276 (corresponding to a rate of 30 per thousand total births), including 37 in London.

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In England Now

A Running Commentary by Peripatetic Correspondents

THE world is getting smaller every day, as they were fond of telling us in our youth. In our grandfathers' time a partial failure of the Nile floods in lower Egypt could have no effect on England, and it is doubtful if severe floods in the Severn valley or a volcanic eruption in Wales would have done London any harm; but today, because the rains have failed in South India and there has been a war in Burma, we are compelled to have more severe rationing in England than we ever had even when we were at war. The strange part of this is that all the rationing is voluntary. Were we to permit ourselves to buy in the open market most of it would be unnecessary. Were we prepared to let the population of Europe starve as a result of the war Germany itself started, the population of England could live far more comfortably. It is pure humanitarianism that is responsible for our present low rations, and it is greatly to the credit of the British housewife that such a state of affairs exists.

In diverting food-supplies to India other factors have to be considered. There has been no complaint at letting some hundred thousands of tons of food be diverted to India to help in the famine; but I am afraid that if this state of affairs occurs in India too often there will be less sympathy than there is today. If India continues to increase its population by five million every year it will constantly be calling on the world for supplies, and in time the world will ask why India cannot kill off its millions of useless cattle that are now kept on cultivatable ground, not because they perform any useful purpose or supply meat or milk to the starving millions but merely because they are sacred animals which no good Hindu could possibly kill. Sympathy may be a thing to be encouraged but there is a lot in the old saying that charity begins at home.

* * *

A spell of quasi-Mediterranean sunshine enables one to spend the luncheon-hour in the embankment gardens at Charing Cross, absorbing calories parenterally and listening to the band. The shirley poppies are at their best, and the dahlias are coming on nicely. The only fly in the ointment, especially if one is listening to the music, is the proximity of the railway. A beautiful finale, with soft notes fading away to nothing, was interrupted by a piercing whistle from a light engine on Hungerford Bridge. A few minutes later the Irish Guards were playing *Chin, chin, Chinaman*, and, when they came to "chop, chop, chop," the railway guard, not to be outdone, started his train off, in perfect rhythm, with "Puff, puff, puff"—which went on long after the band and caused a wave of merriment to ripple through the crowd, supporting the theory that the basis of a joke is the juxtaposition of the incongruous.

* * *

When I was a young man and a guest among my seniors I was sitting at dinner beside the accomplished neurological physician of those days. Our talk included the different ways in which enterprising practitioners tried to get patients. He told me of a fashionable doctor who button-holed two men separately at a dinner party and told both that they did not look too well and that he could put them right. They were so impressed that they decided to consult him, but they happened to arrive on his doorstep at the same moment. Before ringing the bell they had a little conversation together, decided they were victims of a plot, and went home without more ado.

My neighbour went on to tell me of two consultations a famous consulting physician had with a general practitioner who called him at different times to see the wives of two conductors of orchestras. The first was a heart case, and the consultant remarked that the profession of the husband probably had something to do with the musical murmur he found. The second case was one of intestinal obstruction and the general practitioner reminded his consultant of his little joke and said it would puzzle him to link this condition with the husband's job. "I'm not so sure," said the consultant, "I strongly suspect the trouble is due to a band."

Higher exams are becoming like wine: there are good and bad years. Diplomas 1946 (anyway the D.X.Y.) must be recorded as a good year. Those who got one might, with justifiable pride, put "D.X.Y. (vintage '46)" after their names, because the standard has suddenly become hot-stuff. Won't old Bevan be in the soup in a couple of years' time when he finds he hasn't got the little graded specialists that were found to be so necessary and to have done quite good work in the Services. The trained psychiatric social worker is a rare avis now, through just the same policy of insisting on a very high standard. The result? Oh, merely that many patients get no attention at all instead of quite a lot, albeit a little inferior.

* * *

As soon as I saw him, I knew he had to be called Wilbur. He was a large bright green affair, a German synthetic effort with ferocious hairy antennæ and protuberant yellow eyes. I doubted whether there was ever a fish so greedy as even to contemplate Wilbur, let alone stomach him. Still, I decided to try him out on the local lake, after having mellowed him a little with a long soak in flavine. Wilbur took off optimistically enough, winging the air ahead of the catgut, looking perhaps most like a semi-metamorphosed tadpole out of cockroach (as they say in horse-breeding). I hoped the trout would not mind his exophthalmos, or his slightly sea-sick depressed expression. Poor Wilbur; though his take-off was so perfect, he did not stay up long, but landed (owing to my suddenly noticing half a platoon of young Germans watching the exhibition with keen interest) on the seat of my trousers B.D. A hasty tug only drove him deeper into the material. It was difficult to maintain an air of calm superiority and equanimity, as if the proceedings were necessary parts of the operation of launching a fly, with Wilbur nestling deeper at every tug into one's posterior. I tried humming the theme of the Allegro con brio from Beethoven's eighth symphony, to show my unconcern at the complication. But the ageless music had no impression on my audience, who, no doubt, would have stopped scrutinising Wilbur immediately had I been able to give them "Brooklyn Boogie," or the like. It all ended with Wilbur winning the wrestle. The gut parted, leaving the wretched animal in situ. I could but try again with float and worm. These I got safely into the middle of the water, though the proceedings used up my last reserves of nonchalance. The one thing I cannot do (besides jeep-driving and fuse-mending) is to hook a worm through its cold vital wriggling clitellum.

The Empire will never know at what expense I kept the old flag flying.

* * *

They jammed on Sunday at about 6 P.M. Jammed at red against the traffic in a double three-lane main road, in favour of green for the traffic in a practically unused side-road. The traffic surged up against this stop fairly evenly from both directions most of the time, but there were ding-dong periods when the tail end of one light-crashing direction was so obviously crashing that the head of the facing direction twigged what was going on and crashed them too. I omitted these periods, and also the two occasions when a kindly old gentleman told the leading cars that the lights had stuck, and so vitiated the experiment. I made 25 readings of the interval, taken from the time that the first pair of cars faced each other to the time one leader decided to crash the lights; these averaged 42 seconds, the variability being from 23 to 66 sec. Additional observations suggest that taxis are no different from other vehicles in their readiness to crash lights, and that the exhaust from a jeep is so placed as to enable the passenger to warm his hands in the hot gases as a small child trails his fingers in the water when boating. So now you know; the A.M.I. (average motorist impatience) is 42 sec.

* * *

"... he got very excited and energetic and gave up his job and started leading hunger-marchers and things until he was obviously quite ill so they cut his throat and took out seven-eighths of his gland but they had to leave some behind so he's still a bit of a Socialist I'm afraid but not nearly so violent...."

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Letters to the Editor

"TROPICAL" DISEASES

SIR,—In classification and nomenclature accuracy is as necessary as in other departments of medical and scientific thought. Where a descriptive adjective conveys the idea of the ætiological origins of a disease it is particularly important, since inaccuracy may not only perpetuate false attitudes of mind but may even hamper or postpone an effective attack upon the disease.

There is a large and important group of diseases to which the generic label "tropical" has long been attached. We have our textbooks of "tropical" medicine, our schools of "tropical" medicine, and our diplomas in "tropical" medicine and hygiene. All this suggests (not inappropriately *today*) that the diseases in question are confined to, or at least peculiarly prevalent in, tropical countries. There is, however, a further suggestion implicit in the label (although experienced workers in the field will scarcely endorse it) that geography and climate have a predominant ætiological responsibility for them. Of most of the major and more prevalent diseases concerned this is not strictly true.

Plague, cholera, malaria, typhus, typhoid, the dysenteries, leprosy, hookworm, pellagra, beriberi, have all occurred and sometimes flourished (and can still occur) in temperate climates—not excluding our own islands and the U.S.A. They flourish when and where social conditions are bad, and depart as they are improved. Climate, season, weather, and some natural environments obviously play their part in ætiology (they particularly give scope to certain vectors) but, while these influences remain uncontrollable, the scourges can be made to disappear. They are due, in fact, to varying combinations of poverty, filth, malnutrition, overcrowding, conditions of work, ancient religious customs, and social habits and ignorance of or failure to enforce sanitary laws. In fifty or a hundred years' time, tuberculosis may well have become a rare disease in England, but it will still probably be common in India. Should we in that event re-label it as "tropical"?

In common with tuberculosis and syphilis and rheumatic heart disease, each of these "tropical" scourges may be said to have its own social pathology, a pathology which is nowadays becoming by degrees more clearly appreciated and defined.

Our great pioneers in "tropical" research (whether in the case of communicable or nutritional disease) were among our greatest pioneers in social and preventive medicine. The focus of attention in teaching and research during the present century has, however, been directed too exclusively towards the laboratory and hospital investigation of these diseases—to their study in detachment from the conditions which encourage them. This is not to say that sociological studies and preventive measures have been everywhere neglected, but—excepting when war requires the protection of troops and effective measures of control have had to be rapidly devised or developed—their importance has certainly been underestimated.

Not dissimilarly at home, the emphasis of research and teaching has been more and more on the problems of the clinic and the laboratory and especially upon an elaborate bedside pathology. The result has been that we have been training doctors with little or no interest in social pathology and hygiology. The newly qualified, for the most part, embark upon their careers with small appreciation of the possibilities of preventive and constructive medicine and of the importance of that close association between the remedial and public-health services which is essential to the progress of medicine and the success of any full national service. To find the same apathy about the social factors in disease among doctors and students in the medical colleges and schools of India—where many millions die annually from the prevailing community diseases—is an arresting experience, even if reasons for present failure are not far to seek. East and West, it is clear, have both been labouring under the same limitations and handicapped by a too restricted pathological method and understanding. Medicine as a social science has a very long way to go.

Perhaps it is too much to suggest that our special textbooks and institutes should be renamed, but until we replace the false concept that the environment of geography and climate has major ætiological significance by the truer concept that social environment is in the main responsible for man's most widespread and most crippling diseases in all parts of the world, we shall not be doing our best in preparation for the new age of medicine which is surely coming.

Since we have a direct or indirect controlling interest in the matter of health for a very large area of the globe, this concept must come to influence more largely our research and undergraduate training in all existing and newly projected medical schools in this country and the dominions, and more especially (while we retain responsibilities there) in India and the Colonies. The fact that adverse social factors are often difficult to remove is no argument for retarding the study of their correlations with sickness and mortality or the general and sanitary education of peoples.

Oxford. JOHN A. RYLE.

C.CM. OR MILLILITRE?

SIR,—In your last issue Dr. G. E. Beaumont, commenting on my letter in your issue of June 29, mentions that syringes are usually marked in cubic centimetres instead of millilitres. This method of marking is regrettable, and manufacturers should remedy the defect and would doubtless do so if clinicians insisted upon syringes being properly marked in millilitres. Until syringes are so marked the clinician should not continue the error by recording volumes in cubic centimetres but should convert his readings into millilitres by using as a conversion factor, unity, which is quite accurate enough for all medical purposes. Dr. Beaumont calls attention to the smallness of the difference between a cubic centimetre and a millilitre; but if, in spite of this, he feels any qualms of conscience about using unity as a conversion factor he could state that he used a syringe graduated in cubic centimetres which he had converted into millilitres by using this factor. For work requiring extreme accuracy the conversion factor would be the reciprocal of 1·000027, but Dr. Beaumont need not concern himself with this refinement which is far beyond the limit of accuracy of any syringe.

Apart from the actual difference in volume between the cubic centimetre and the millilitre, the fundamental reason why the cubic centimetre should not be used as an alternative to the millilitre is the fact that there is no connexion between these two units. It is interesting to note that the kilogramme-litre system of measurement (though decimal in character) has been divorced from the metric system. The cubic centimetre, however, remains in the metric system and is quite correctly used as a measure of volume when this has been determined from linear measurements. But it must be definitely stated that the cube of a unit of linear measure, as a mode of expressing volume, has no derivative or cognate connexion with the litre or any of its aliquot parts.

London, S.W.7. J. M. HAMILL.

TANNIC ACID FOR HAND BURNS

SIR,—Your review (March 9) of Marc Iselin's *Chirurgie de la Main* expresses surprise at tannic acid being used for burnt hands.

It is true that bad results have often followed coagulation methods in the treatment of burnt hands, and experience has proved that tannic acid is unsuited to military surgery, in which the potential dangers cannot easily be controlled. There is, moreover, a definite (though slight) risk of tannic acid absorption causing liver damage. Nevertheless, I believe there is no reason why tannic acid should not have some usefulness in civilian practice, where conditions are quite different from those of war.

My experience covering many cases of all types has been that tannic acid has not only proved perfectly satisfactory in properly selected burns of the hand, but has, on the whole, given quicker and better results, with a lower rate of infection, than any of the other methods at present in vogue; and I should be very loth entirely to abandon it until some genuine therapeutic advance is made.

Tannic acid is undoubtedly particularly dangerous if applied to deep hand burns; and the application of hot

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air is most undesirable since it produces desiccation and contraction of both the tan and the tissues, and possibly causes additional thermal trauma.

In assessing the indications for treatment the following classification has proved useful:

1. *Erythema.*—Emollients only are necessary.
2. *Vesiculation.*—A benign burn in which recovery is almost independent of the treatment, provided this is not actually harmful.
3. *Bullæ containing fluid with a high protein content.*—These may burst, leaving a red weeping surface from which protein and fluid continue to be lost. The epithelium is severely damaged but is capable of recovery.
4. *Deeper burns.*—Here heat has destroyed the epithelium. Unless small, they must be grafted because they can only heal from the periphery, and if coagulated they are particularly prone to infection since the coagulum is virtually a foreign body.

Most burns of the hands and forearms are in groups 2 and/or 3. Tanning gives excellent results. Pain is relieved; movements can be carried out at once, unencumbered by dressings; and the resulting healed skin is of excellent texture. Circumferential burns are always of the 4th group on the dorsum, and this rather than the risk of constriction contra-indicates tanning.

Rapid tanning without constriction can most efficiently be obtained by the use of dry powders, which are superior to solutions. After suitable cleansing with detergents and antiseptics, and mopping quite dry, the following powder is dusted on lightly with a swab: tannic acid 20%, talcum 20%, sulphanilamide 60%. A single application only is required, and the coagulum, which is very thin, is produced at once. It dries in about two hours, according to the temperature and humidity.

It was once remarked that the results of burn-treatment depend not so much upon how the burns are treated as upon who treats them. Some American journals in reviewing new books append the names of the reviewer. The adoption of this practice in British medical literature would, I am sure, be welcomed by many readers.

Palestine. F. V. STONHAM.

FURTHER CHALLENGE TO THE MEDICAL ACT

SIR,—You were good enough to allow me (March 9) to draw attention, during the passage of the National Insurance (Industrial Injuries) Bill, to a motion tabled by a group of Socialist back-benchers, who sought to leave to the discretion of the Minister the selection of persons who should be eligible for inclusion in the list of persons authorised to give medical treatment under new legislative proposals. The Minister of National Insurance avoided discussion by declaring that the motion should be more properly addressed to the Minister of Health when the Health Bill came before Parliament.

Your heading to my letter described this motion as a "challenge to the Medical Act." I want now to draw attention to a new challenge to that Act under clause 42 of the National Health Service Bill; the report in *Hansard* of the proceedings of committee C, when clause 42 came up for consideration, demonstrates, by the long debate which ensued, the importance which is attached to this renewed challenge to that Act. The rubric to clause 42 declares that it deals with "disqualification of practitioners," and the practitioners concerned include, in the words of the white-paper (clause 69), "doctors, chemists, dentists, and opticians"!

The tribunal is to consist of a barrister or solicitor as chairman, appointed by the Lord Chancellor, and two other members appointed by the Minister. To this tribunal is given the right of disqualification of practitioners, and appeal from this tribunal to the courts is disallowed, the Minister being given the final decision in the matter. The consequent injury to the practitioner thus dealt with may be even more serious than the injury now resulting to the practitioner who is removed from the Medical Register. Such removal does not disqualify from practice, as does removal from the public service by the tribunal, and reversal of G.M.C. decisions by the High Court is not ruled out, as the recent cases of Drs. Spackman and Hennessy demonstrate. They were able, it is true by indirect methods, to secure such reversal, and to resume practice. I understand that in the earlier history of the Medical Act, 1858, direct appeal to the courts from G.M.C. decisions was not infrequent, and fell into abeyance through the action taken by the High Court itself, which explicitly discouraged such appeals, as for instance in the memorable judgment given by Lord Bowen, who declared that "providing due enquiry had been made by the Council, the jurisdiction of the Domestic Tribunal, which had been clothed by the Legislature with the duty of discipline in respect of a great profession, must be left untouched by courts of law."

If clause 42 [survives the report stage, as seems inevitable, the professional life of the doctor of the future will be far more insecure than it is now under the exclusive jurisdiction of the much-criticised G.M.C. The issue, just published, of the Health Bill, as amended by standing committee C, allows of a comparison of the amended with the original draft. The most material, and indeed practically the only, change observable in clause 42 of the Bill as it has passed the committee stage is the omission of section 4 from the original version, which provided for an appeal to the Minister.

It is clear that the voting strength of the Socialist party has been ruthlessly exercised in the proceedings of committee C. The Bill, as amended, emerges with but little, and that insignificant, change.

House of Commons, London, S.W.1. E. GRAHAM-LITTLE.

COMPULSION FOR DOCTORS

SIR,—Socrates said that no wise man indulges in politics—or words to that effect. May, however, a conservative liberal, with socialistic tendencies, make an exception, and express his thoughts on the present medico-political situation in your valuable pages?

In support of the proposed State medical service, much is made of the need for the compulsory direction of doctors to practise in areas insufficiently provided for medically. Of course, until the community is organised into uniformity, with an exactly equal proportion of doctors, lawyers, grocers, builders, &c., per thousand of the population in every area, there may be some regions with a slightly higher or lower proportion of one or other of these professions. But, generally, most areas have naturally attracted to themselves the most suitable number of each of these classes of workers. If, however, in the case of some possibly unattractive region, doctors have exceptionally not followed the needs of the population in sufficient numbers, it is always open to the local authority to increase the attraction by the bait of a free house or other reward.

For this natural evolution is proposed the substitution of compulsion to practise in a given area against one's inclination, the money which might have served as an inducement so to practise being diverted to the army of bureaucrats who will do the compelling. For, under the State system, the doctors, who, after all, will do the work, will have to accept a lower financial return, in order to pay for the necessarily gigantic bureaucratic machine.

This measure of political sadism, so alien to British tradition, is being hurried through in a moment of national mental aberration, perhaps induced by the fatigue of war.

Under the pretext of improving the national health, the thin edge of the totalitarian wedge is being aimed first at the medical profession, since doctors, being individualistic, and having no union, but only an association, are an easy prey. Once they are enslaved, the other professions and trades will surely follow them to slavery.

It would, of course, have been impolitic to start with a campaign for a State legal system, as there are too many lawyers in the House of Commons.

It is interesting to note the enthusiasm in trade-union circles for this dictatorial medical scheme, possibly due to a failure to realise that this is the first step towards a dictator State, and to forgetfulness that under full totalitarianism, as in Fascist Italy and Nazi Germany, the trade-unions were suppressed.

Incidentally the big annual financial contributions which everybody will have to make, in order to enjoy this "free" medical service, will enable those who for years have not needed medical attention to say, "Never before have so many paid so much for so little."

May sanity return before it is too late.

London, W.1. ALEX E. ROCHE.

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SPONTANEOUS MESENTERIC VENOUS THROMBOSIS

SIR,—The following case of recovery after resection, without heparin, seems worth reporting.

A baker, aged 53 years, 5 ft. 4 in. in height and weighing 12½ st., first complained of abdominal colicky pain, with the passage of two loose stools without blood, on Nov. 6, 1944. Temp. 99·0° F, pulse-rate 72. Abdomen (difficult to palpate owing to obesity) was distended, without definite tenderness.

Nov. 7.—His condition was the same, but temp. 98·4° F, pulse-rate 72. Bowels not opened.

Nov. 8.—Turpentine stupes and enema produced small fæcal result without blood.

Nov. 9, 10, and 11.—He appeared to improve in that his appetite returned and he wished to get up.

Nov. 13.—His improvement was maintained in the morning, but in the late afternoon he complained of severe epigastric pain, with profuse sweating, and he vomited a little bile. I sent him into hospital as ? intestinal obstruction or ? mesenteric thrombosis.

Nov. 14.—His condition was reported to have become more acute, and laparotomy was performed by Dr. Joseph Chalmers, who resected 2 or 3 ft. of lower ileum, which were completely gangrenous as the result of mesenteric thrombosis.

Recovery was uneventful except for some œdema of both ankles, which persisted until January, 1945. He has now long been back at work, and has apparently completely regained his normal health.

Keighley. WRIGHT LAMBERT.

HEARING-AIDS

SIR,—When one has built up a business and goodwill by exceedingly hard work, it is galling to learn of the statements of Government spokesmen who are, unfortunately, not properly informed by the departments and are apparently using every effort to smash what one has built up over many years. I am referring to the propaganda relating to the Government hearing-aid and I would be grateful if you would print some of the facts as a corrective to the misleading statements which have been made. The relevant facts are:

(1) The present disclosure of the exploitation of the deaf ignores that there is a most reputable section of the hearing-aid industry subscribing to the rigid code of conduct laid down by the National Institute for the Deaf.

(2) The propaganda is harmful to the reputable and disreputable, whereas it should be designed to clear out the latter.

(3) My own company have supplied 20,000 hearing-aids by personal recommendation alone, all after trial before purchase.

(4) Every Amplivox hearing-aid has a crystal microphone and three valves as per the Post Office specification.

(5) We were making amplifiers measuring only 3 in. × 2 in. × 1 in. in 1937. The Government hearing-aid having an amplifier of this size is stated to be revolutionary.

(6) We made hospital hearing-aids for as little as £6 in 1938.

(7) The hearing-aid industry produced in 1943 a specification for a British standard hearing-aid to sell at £10 10*s*. The plan was held in abeyance because of lack of Government support.

(8) The British-made valve-amplified hearing-aid gives better results and is more reliable than any other hearing-aid in the world today and is exported to every country throughout the world.

The hearing-aid industry, with its hard-won knowledge in this difficult field, has not so far been consulted in connexion with this Government scheme.

A. EDWIN STEVENS
London, W.1. Governing Director, Amplivox Ltd.

SIR,—Some of the information contained in your report of June 29, on the 'Bonochord P.4' hearing-aid, is not now correct. You comment that the high-tension battery is difficult to get, but in point of fact it has been listed by the Ever Ready Co. as a standard product, obtainable from radio and electrical stores, for the last three months. You also comment that the meatal receiver supplied for test was not working. This is not correct. The earpiece was supplied in working order, but when the instrument was returned to us the adjustment on the earpiece had been moved, bringing the diaphragm hard down on the pole-pieces, thus making the earpiece ineffective.

The current model has new type miniature valves, also a reduction in low-tension cost, providing twenty hours of life from a 9½*d*. cell, as opposed to the previous low-tension battery which gave twenty hours of life from a 1*s*. 9½*d*. cell. In addition, the instrument has been improved by incorporating both batteries in a single miniature pack, and by increasing both the top response and the output of the aid.

T. CONSTANTINE
Managing Director, Allen & Hanburys (Acoustic Aids) Ltd.
London, W.1.

NURSING

SIR,—When I read Mr. Sol. Cohen's article on Democratic Nursing, I experienced that exhilaration which comes from finding one's own thoughts and feelings expressed with brilliance and felicity. Even in these days, though more rarely than formerly, I find myself acutely embarrassed by the method of address adopted by a few senior sisters to junior nurses. I contrast it with that natural charm with which my wife treats those who work in our home, and I realise that it is just that quality in the director that makes for smooth running, efficiency, and happiness in any community.

I have been a patient in many wards, mostly in military hospitals, and if ever I become a patient again, I pray that the fates will land me in a ward where the sister in charge is prepared to sacrifice a ha'p'orth of efficiency for a pound of humanity. In my own hospital I have in mind a ward where laughter and happiness prevail, but where I suspect meals may sometimes be ten minutes late and from where pillow-slips and crockery may be occasionally unaccountably mislaid.

Apart, however, from this aspect of the nursing problem, there is another point about which I feel very strongly, and that is the training of the theatre nurse. The standard of assistance in the theatre in the teaching hospitals up and down the country is lamentably below an adequate standard. This is not the fault of any person but of the system. "Doing instruments" and assisting at operations are specialised and isolated parts of nursing and demand qualities and interests quite different from those needed for the nursing of sick patients. A good ward nurse may be a bad theatre nurse, and vice versa. Because of shortage of staff, many excellent ward nurses, who for one reason or another have not got their hearts in theatre work, are transferred from the wards, where they are doing a first-rate job, to the theatres where, to their own and everyone else's exasperation, they find that they are woefully inefficient. Theatre nursing is a profession in itself, and it should be possible to train nurses for it and for it alone. If this were done, it would encourage girls to enter the nursing profession who shrink from the domestic and menial side of the duties of the ward nurse; it would ensure a prolonged and adequate training of the theatre nurse with immeasurable improvement in efficiency; and it would save depleting the ranks of those nurses whose whole instincts prompt them towards human contacts and whose kindness, even tenderness, towards their patients are the brightest stars in the nursing firmament.

Guy's Hospital, London, S.E.1. H. J. B. ATKINS.

CULTURES IN FEMALE GONORRHŒA

SIR,—The details given by Dr. Walker in her letter in your last issue seem to require no comment from us, except our congratulations to the department concerned on the high standards which have been maintained. At the same time perhaps we should make it quite clear that our suggestion with regard to commercial media had no bearing on the standards of excellence which have been and are still being achieved in some laboratories. The need is to raise the general standard throughout the country.

London, E.1. A. J. KING.
E. GALLAGHER.

*** Professor McLeod's method of culture involves incubation of the organisms in air containing 8% carbon *dioxide*, not carbon monoxide as printed last week.—ED. L.

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RELEASE OF SPECIALISTS

SIR,—On p. 30 of your last issue you report that the Minister of Health expressed himself satisfied that the Central Medical War Committee are making every effort to find replacements for specialist medical officers at present serving in H.M. Forces. Lest any of your civilian readers should think that serving specialists are suffering from delusions of persecution it may be well to state the demobilisation position as it will be at the end of September. Medical specialists in the Army will then be five groups behind officers and other ranks of other arms of their Service, seven groups behind medical officers of the R.A.F., fifteen groups behind general-duty officers of the R.A.M.C., and twenty groups behind medical officers of the Navy.

A few months ago the Central Medical War Committee announced that they had powers to call up specialists in civil life up to the age of 45. How many of these have been called up? Every three months the committee announce the demobilisation programme for the coming quarter. It is remarkable that they, who have been in charge of medical manpower for nearly seven years, are unable to forecast more than three or four groups ahead at any one time. Such unaccountable secrecy prevents those of us in groups not yet even mentioned from applying for civil appointments, since we can give no definite date by which we can expect to be demobilised.

As far as class B releases are concerned, it seems that for a specialist to be demobilised in this way a substitute has to be provided. I have studied Release Regulations for the Army, and can find no mention of this rule, so I assume that this is another example of the extraordinary tyranny under which we labour at the hands of this remote and reticent committee.

An open balance-sheet of specialists awaiting demobilisation and those eligible to be called up (I do not refer to those whom the teaching hospitals, the E.M.S., and the Medical Research Council consider "essential") would do far more to allay the resentment and dissatisfaction felt by serving specialists than any number of fatuous voluntary schemes which are produced for the derision of our more canny and essential professional brethren in civil life. Why cannot the Central Medical War Committee now use the totalitarian powers which they exercised so freely and remorselessly during the war?

The Minister of Health is to be congratulated on his satisfaction with the position. As a prominent member of a party on whose hustings last July could be seen the slogan "Vote Labour and get the Boys Home," he evidently possesses either an elastic conscience or a remarkably euphoric outlook. SERVING SPECIALIST.

PROPHYLACTIC PENICILLIN IN SURGERY

SIR,—I was glad to see Mr. R. Wood Power's letter in your last issue, because there seems to be little published work on this very beneficial practice which I believe to be widely employed.

I would like to add to his list of operations for which prophylactic penicillin might be of value that of tonsillectomy by dissection. Everybody who carries out this operation in a large series of cases must have met the occasional cases of pyrexia, scarlatiniform rashes, and, most tragic of all, nephritis following the operation. I regard such consequences of a non-urgent operation on a comparatively healthy child as a major disaster. In an endeavour to avoid them, Mr. J. B. Cavenagh, at my suggestion, recently introduced a routine at this hospital by which every patient is given 15,000 units of penicillin just before the induction of anæsthesia, and a further 15,000 units three and six hours afterwards. Personally I regard it as unnecessary to give a twenty-four hours' course before operation, since high blood-levels are invariably obtained within a few minutes of intramuscular injection.

Although our series is as yet too small to be scientifically significant, none of the complications named has occurred, nor has there been a case of secondary hæmorrhage since this routine was introduced. If it has prevented the development of nephritis in even a single child it is in my opinion amply worth the trouble and expense.

Royal Infirmary, Worcester. G. J. FRAENKEL.

Medicine and the Law

Alleged Cruelty to Cats

Prof. E. G. T. Liddell, Waynflete professor of physiology in the University of Oxford, was fined £25 last month by the Oxford magistrates on a charge of causing unnecessary suffering to cats in the animal-house of his department. Notice of appeal having been given, comment on the case must be deferred. The following brief summary of the proceedings is taken from the full report published in the *Oxford Times* of June 28.

Counsel, prosecuting on behalf of the Royal Society for the Prevention of Cruelty to Animals, alleged that, in a compound about 15 ft. by 10 ft., there were 34 cats "in every stage of misery and disease." Some were apparently dying; one was dead. The place smelt abominably. There was a pan of water, but no sleeping accommodation for the animals. Some were suffering from advanced stages of feline distemper; some were practically blind; others could scarcely breathe. Professor Liddell, said counsel, must have wilfully abstained from going to the place. The same was true of Mrs. Scragg, the woman who had charge of the cats. "If this case is proved, it has discovered a university plague-spot which calls aloud for immediate and drastic reform." Two inspectors of the R.S.P.C.A. gave evidence. One of them said he destroyed four cats in the defendant's presence and with his agreement. A veterinary surgeon (who, it appeared, has been appointed chief veterinary officer to the society) said he would not keep more than six cats in a space of 100 square feet, for fear of an epidemic; it was wrong to keep these catsas they were kept; each should have had individual treatment for distemper.

Professor Liddell, giving evidence, explained that he had been experimenting with the treatment of animals with sulphamethazine. It was found that by its use the secondary infection, but not the basic virus of distemper could be overcome. He himself had given the drug three times a day and had fed cats which could not feed themselves. Four days before the inspector's yisit he decided to suspend the treatment to see what would happen. Distemper in cats was like measles in children; "once they have had it, they probably won't have it again." The witness described how he dealt with the cats. He was asked in cross-examination where he got the cats. "Somebody's pets, I suppose," commented counsel; "so far as you know, they may have been stolen?" The witness said the cats were not deliberately infected. The drug was being administered to check the distemper. The experiment had a negative result. The infected cats were not capable of feeling suffering because of lethargy of the nervous system. The experiment was not calculated to give pain. Prof. Harold Burrow, M.R.C.V.S., said there was ample room in the compound for 34 cats; the floor was suitable. Quick emaciation was a feature of feline distemper. Dr. A. D. Gardner, professor of bacteriology at the university, said that pain would decrease as coma and lethargy came on; he had heard nothing that made him feel that these animals suffered appreciably more than the suffering of all living things.

The magistrates found the charges proved. Professor Liddell, in addition to being fined £25, was ordered to pay ten guineas costs to the prosecution. Mrs. Scragg was fined £5.

On Active Service

CASUALTIES

ACCIDENTALLY KILLED

Flight-Lieutenant IAN ARCHIBALD MCLEAN THOMSON, L.R.C.P.E., R.A.F.V.R.

Flight-Lieutenant Thomson, who was killed in a flying accident on June 25, was born in 1916 and studied medicine at Glasgow, where he obtained the triple qualification in 1942. After holding house-appointments at the Royal Infirmary, Glasgow, from March, 1942, to December, 1943, he was granted a commission in the Royal Air Force Volunteer Reserve. At the time of his death he was medical officer at a Communication Wing headquarters in Germany.

AWARDS

D.S.C.

Temporary Surgeon Lieut.-Commander R. G. S. WHITFIELD, M.R.C.S., R.N.V.R.

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Parliament

ON THE FLOOR OF THE HOUSE

THE National Health Service Bill has completed its committee stage, and the verdict of members is that it was a very good-tempered committee. The report stage and third reading will follow this month; the Bill will then be sent to the Lords; and the final form will be passed when Parliament reassembles after the recess. Members of all parties, with some Conservative reservations, are satisfied that a good job has been done, and the only complaint was of the strenuous nature of the committee stage. But this hard going was implicit in the situation and was accepted with as much philosophy as possible.

The high-light in the House last week was the debate on the rationing of bread. Mr. Strachey's presentation of the facts convinced most of his hearers that however inconvenient rationing of bread may be—and its inconvenience has been perhaps magnified—we must accept it as a necessary insurance measure in a difficult world food situation. There was a good deal of heat in the debate but also much light, and this revealed a scarcity in the bread larder which must give pause to anyone who advocates non-rationing. There is enough, but there is no margin with which risks can be taken. Even in these days of good weather-forecasting we cannot be certain months ahead.

The fixing of the time of the Peace Conference for the end of this month, and the settlement of the vexed question of the status of Trieste, bring a great release of strain. With international problems on the way to solution every nation in Europe and the world can turn with more confidence to the problem of peace within its own borders.

In a session less crowded with legislation, and in a world less disturbed by the after-tremors of war, the New Towns Bill, which has advanced a further stage in the Commons, would have attracted more attention. As it is, legislation which sets out to re-create a large part of the urban life of this country is almost regarded as non-contentious. At least it excites few angry passions. And yet the planning of new towns will change the face of England, and make it a healthier-looking face.

Another cause for satisfaction in the international field is the return from India of the mission of three Cabinet Ministers who have set that subcontinent on its new road to freedom. India now has the opportunity for which her leaders have been asking for many years; though what she will make of it remains to be seen. To those who look forward not only to peace in Europe but also to a new era of peace in the East it seems that the first session of the present administration will end in happier circumstances than for many a long year.

MEDICUS, M.P.

THE HEALTH BILL IN COMMITTEE

PROPOSED NEW CLAUSES

WHEN the committee resumed its discussion of the National Health Service Bill on the afternoon of July 2, a clause by Mr. SOMERVILLE HASTINGS was given a first reading; by it, in the county of London, special representation was to be accorded to the local health authority on the regional hospital board, the hospital management committees, the executive council, and the boards of governors of the teaching hospitals. Mr. C. W. KEY said that there was no reason to vary the constitution of these bodies for London; local authorities would be consulted in deciding the composition of these bodies. The motion that the clause should be read a second time was negatived.

CONTROL OF MEDICINES

Mr. H. N. LINSTEAD presented a new clause calling on the Minister to appoint a committee which should form a list of medicines that were not recommended. The patent-medicine industry, he said, made the public conscious of ill health and caused them to regard the taking of medicine as necessary to good health. In many it certainly created fear and sometimes it caused postponement of seeking skilled medical advice. The claims made for some preparations were frankly deceitful, and there was some gross overcharging. Mr. A. BEVAN said that, though sympathetic with the purpose of the clause, he could not allow such a wide subject to be tucked in at the end of a committee stage. He recognised, however, that it was long past the time for the protection of the public against the ramp that was at present going on. The motion was withdrawn.

CENTRAL COUNCIL AND ADVISORY COMMITTEES

In the discussion of the first schedule, Mr. H. WILLINK said that a medical hegemony was not wanted in the National Health Service; in the Central Health Services Council, the five persons with experience of hospital management and the five persons with experience of local government should be the lay elements. He moved that they should not be medical practitioners. Mr. BEVAN agreed, and the amendment was carried.

Mr. BEVAN moved an amendment to allow of payment in respect of loss of remunerative time incurred through service by members of the council and standing advisory committees. The amendment was agreed to, and the schedule was passed. The adoption of the second schedule (acquisition of hospital property other than land) was also agreed to.

BOARDS AND COMMITTEES

In the third schedule, Mr. WILLINK moved that, apart from Ministerial appointments, members of regional hospital boards should be nominated by local authorities from the four categories already to be included. The aim, he said, was flexibility and balance, but there was too much flexibility in the schedule as it now stood. Mr. BEVAN agreed that the regional hospital boards were exceedingly important. They must be flexible because the needs of the regions varied, as did the richness of the human material. There must be modification after experience of the boards, and there should undoubtedly be strong lay representation: "Doctors . . . individually, are the most charming and educated persons, but, because of their immersion in their profession, their collectivity is not the sum of their individual intelligence." Mr. Willink's amendment was withdrawn.

A motion by Mr. WILLINK that a hospital management committee should have power to coöpt not more than three persons was negatived, and the committee adjourned.

When it reassembled on July 3, Colonel M. STODDART-SCOTT moved an amendment to the proposed constitution of the boards of governors of teaching hospitals. Members should, he suggested, be nominated in a certain proportion; he proposed that a sixth should be nominated from the universities, a sixth by the regional hospital boards, a sixth by the medical, dental, and other members of the teaching staff, and a sixth after consultation with the local health authorities, and that the other persons should be appointed from the members of the governing body of the hospital. The boards should have power to coöpt not more than three persons, and should have the opportunity of electing their own chairman. Mr. WILLINK said that the change of the proportion from a fifth to a sixth was suggested to allow a small quota from the local health authorities. Continuity would be ensured if, after the nomination of two-thirds of the members by the Minister, the remaining third were chosen from the existing board of governors.

Mr. SOMERVILLE HASTINGS opposed appointments to the new boards from the ranks of those now in being; the present tradition as to the appointment of governors was not entirely satisfactory. Lord WILLOUGHBY DE ERESBY called for better university representation on the boards.

Mr. BEVAN said that overemphasis on the academic aspect must be resisted. The teaching hospitals were part of the general-hospital service and were expected to give general-hospital facilities. There had been a

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disposition by the teaching hospitals to leave to the municipal hospitals the cases that were not interesting; that was why the teaching-hospital service must, in its administration, be as much an agent of the Minister as the regional board. Continuity of administration was desired, and would be considered, but the importunities of the teaching hospitals must be resisted. At the moment the universities had scarcely any representation, and this Bill for the first time formalised and regularised the relationship between academic medicine and hospital administration, as had been recommended by the Goodenough Committee. Colonel Stoddart-Scott's amendment was negatived. The schedule, with amendments, was agreed to.

LOCAL HEALTH AUTHORITIES

Mr. WILLINK moved an amendment that every health committee of a local health authority should include one or more medical practitioners. It was not right, he suggested, to run the risk that the only medical man attending the health committee might be the medical officer of health or one of his assistants. Sir HAROLD WEBBE supported this proposal for coöption, as a means of closing the fissure between the hospital service and the public-health service. Mr. BEVAN resisted the proposal; the scheme already devised provided, he said, for a very great degree of professional self-government and professional participation in the health services as a whole. The amendment was negatived and the schedule, with some amendments, was agreed to.

EXECUTIVE COUNCILS

In the discussion of the fifth schedule, Dr. RICHARD CLITHEROW suggested that the local executive council should include a representative from the optical practitioners' committee and better representation from the pharmaceutical committee. Mr. BEVAN pointed out that the ophthalmic service was to be a feature of the regional boards and not of the executive council. The council would call into existence the ophthalmic services' committee, but the supplementary service would not be exercised through the executive committee. In reply to Mr. Linstead, Mr. Bevan said that in the council, which consisted of representatives of highly organised elements in the community, there would at first be a tug-of-war for supremacy. An important appointment like the chairman of the council ought, in the first instance, to rest with the Minister. After homogeneity had been attained, it would be easier for the Minister to accept nominations. What was wanted on the executive council was not representation of interests but a pool of technical knowledge. The schedule, with minor amendments, was agreed to, as were the remaining schedules, and the committee rose.

The committee stage has now been completed, and the amended Bill is to be reported.

FROM THE PRESS GALLERY

Pay of Medical Officers in Services

New rates of pay for members of the medical, dental, and veterinary professions serving in the Armed Forces were announced by Mr. J. J. LAWSON, Secretary of State for War, in the House of Commons on July 5. From July 1, 1946, there will be a common scale of pay and time promotion in the medical and dental branches of all three Services. Officers will be appointed in the rank of acting surgeon lieutenant R.N., lieutenant, or flying officer, and promotion will be by time to surgeon lieutenant R.N., captain, or flight lieutenant after one year, and to surgeon lieutenant-commander, major, or squadron-leader after eight years. Thereafter promotion will be by election. Medical officers will be paid as shown in the accompanying table.

CONDITIONS OF SERVICE

It is intended to continue the arrangement under which a medical or dental officer who is commissioned after holding an approved whole-time appointment in a recognised civilian hospital may be granted an antedate of seniority. In future, however, there will be a common rule for all three Services, and the antedate, which will count towards the service qualifying for increments of pay and for promotion to the rank of major or equivalent in the other Services, will take effect on completion of 12 months' service.

The arrangements for the encouragement and reward of specialisation are still under consideration.

PAY OF MEDICAL OFFICERS IN SERVICES

Approx. age	Service	Rank	Pay (daily) s.	d.
25	On appointment	Acting surgeon lieutenant R.N., lieutenant, or flying officer	22	0
26	After 1 year	Surgeon lieutenant R.N., captain, or flight lieutenant	28	0
28	,, 3 years	ditto	31	0
30	,, 5 ,,	ditto	34	0
32	,, 7 ,,	ditto	37	0
33	,, 8 ,,	Surgeon, lieutenant-commander, major, or squadron-leader	43	0
35	,, 10 ,,	ditto	46	0
37	,, 12 ,,	ditto	49	0
39	,, 14 ,,	ditto	52	0
	On appointment	Surgeon commander, lieutenant-colonel, or wing-commander	58	0
	After 2 years	ditto	61	0
	,, 4 ,,	ditto	64	0
	,, 6 ,,	ditto	67	0
	,, 8 ,,	ditto	70	0
	On appointment	Surgeon captain R.N., colonel, or group-captain	75	0
	After 2 years	ditto	78	0
	,, 4 ,,	ditto	81	0
	,, 6 ,,	ditto	84	0
		Surgeon captain R.N. (after 8 years as such), brigadier, or air commodore	87	0
		Surgeon rear-admiral, major-general, or air vice-marshal	110	0
		Surgeon vice-admiral, lieutenant-general, or air marshal	135	0

SERVICE RETIRED PAY AND GRATUITIES

The new general scheme of service retired pay and gratuities for Regular officers, details of which are given in appendix 3 of the white-paper, Command 6750, will also apply to permanent Regular medical, dental, and veterinary officers who were serving on the active list on Dec. 19, 1945, or who are commissioned after that date. There will be some adjustment on the lines of existing arrangements, for Naval medical officers who retire with less than 25 years' service after having received the special gratuity of £1000 which was payable under the old code.

Medical, dental, and veterinary officers who are now serving with permanent Regular commissions will, like other officers, remain eligible, if to their advantage, for awards under the regulations now superseded, instead of the new terms. (See paragraph 67 of Command 6750.)

Officers who retired with retired pay before Dec. 19, 1945, and who served during the war, will be allowed reassessment of their retired pay in respect of their war service under the terms of the scheme announced in the House of Commons on April 15.

Bread Rationing

In the House of Commons on July 3 Mr. JOHN STRACHEY, Minister of Food, opened a debate on the Government's decision to introduce bread rationing. He explained that there was no stock of wheat whatever in the sense of there being some great reserve lying idle somewhere in the country. There was only the wheat which was going through what the Americans called the pipe-line from the ship as it arrived in port to the counter of the baker's shop. At the end of August there would be about 800,000 tons—that is, about eight weeks' supply—of wheat or flour in the country, but it would be a delusion to suppose that the country's grain supply would continue for eight weeks at that level without new supplies coming in. A breakdown would occur very much before eight weeks; exactly when was a matter of opinion. Stocks never had reached that breaking point, and none of the experts of the Ministry of Food was prepared to say that it would occur when the stock was at any particular figure; but somewhere not far below the 800,000 tons figure a point would be reached where the distribution system, first of wheat and then of flour after it had been milled, would finally break down. The exact level of safety to which the pipe-line should be allowed to drop without bread rationing was somewhat academic, but Mr. Strachey

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said that the greatest experts of his department believed it would be reckless to let it drop below a minimum of 750,000 tons of wheat and 300,000 tons of flour. The experts might have been overcautious, but it would be a great responsibility to overrule their opinion.

The estimate that our stock of wheat would be 500,000 tons, and of flour 300,000 tons, at the end of August next was based on three assumptions. The first was that the United States would in fact deliver to us the whole of the 456,000 tons of wheat which repaid the loan of 200,000 tons and made good the inability of Canada to supply us with the usual quantities of wheat during the next two months. He had no doubt about the United States administration's intentions to do that; but their ability to do it was bound up with economic and industrial conditions which might cause delays. To postpone any decision on bread rationing here would be to gamble on American labour relations and on the course of affairs in Congress during the next few weeks. The second assumption was that we should receive from our own harvest during August 75,000 tons and during September 250,000 tons. While the harvest prospects were good it would be rash to gamble on the vagaries of our climate during the next two months. The third assumption was the size of the Canadian crop, which would be the dominant factor in our prospects of wheat supplies in the autumn, and also beyond the August point he had mentioned. Although the Canadian crop promised very much better than it did a few weeks ago, it had by no means passed the danger point yet, and once again we could not afford to gamble on the weather on the Canadian prairies.

If all these assumptions, and some others, turned out to be justified, and if things proved to be even better than the estimates he had given, we might scrape through without bread rationing. But, what a wholly unjustifiable risk that would be to take with the food of the people! The Government refused to take such a risk. Moreover, if wheat and flour were not rationed a good deal of our supplies would find its way in the autumn to animal rather than to human consumption. It was not the policy of the Government to increase the slaughter of herds in this country; the figures on which the increase in the meat ration had been made were based entirely on our present stock of meat and were due to more favourable imports of meat from abroad.

HELP FOR OTHER COUNTRIES

Dealing with what this country had done to help the semi-starving countries of the world, and the reason why the British Government believed that Britain had now come to the end of its ability to help any more in that direction out of its own meagre resources, Mr. Strachey said that since November, 1945, we had sent or diverted 60,000 tons of cereals, mostly wheat, to India; 60,000 tons through UNRRA to Italy, Poland, Greece, and Yugoslavia; 60,000 tons to Germany; 10,000 tons to South Africa; and 10,000 tons to Belgium. All this tonnage was lent, and would be replaced by the United States government. In addition, we had sent to the British zone in Germany since the same date 192,000 tons of wheat, 109,000 tons of flour, 105,000 tons of barley, and 132,400 tons of potatoes. The sending of these supplies to India and to Western Europe had undoubtedly been a factor in the present decision to ration our own bread. But he believed that the Government had been fully justified in sending this relief and he was proud to be a citizen of a country which had made such a contribution. (Cheers.) As to nutrition in the countries to which the relief supplies had been sent, Mr. Strachey admitted frankly that he was far more concerned with the standard of nutrition in India, France, Holland, Greece, Yugoslavia, and many other Allied countries, than with the feeding of Germans. But the British zone in Germany contained the Ruhr, the industrial and raw-material heart of Europe, and on the Ruhr, whether we liked it or not, depended the recovery of all Western Europe.

It might be said that all the stories about malnutrition, or even semi-starvation, in the British zone in Germany were nonsense and that the Germans were managing to pull food out of their cupboards and were perfectly well off. But the Ministry of Food could not rely on travellers' tales. Mr. Strachey quoted extensively from the report of the tripartite committee on their investigation of conditions in Germany (summarised in THE LANCET of July 6, p. 22). The best the Government could try to do was to maintain the conditions described in the report—that is, to maintain the 1000-calorie ration which produced the serious malnutrition described in the report. Merely to maintain that inadequate calorie level, in addition to the utmost that we could do by way of procuring grain for the western zone from Argentina, or anywhere else, the United States would have to ship at least 120,000 tons of wheat to the British zone in each of the next three months. During his (Mr. Strachey's) own visit to America in the previous week he found that the U.S. authorities were much less definite about shipping that amount to the British zone than they were about sending 450,000 tons to us during the same period. That was gratifying and flattering to us, but if the United States failed to ship that 120,000 tons to Germany there would be a fatal breakdown in the present 1000-calorie ration, with incalculable social and political consequences, apart from human consequences, throughout Western Europe. He had every hope that the United States government, when they were fully seized of the whole situation, would supply that 120,000 tons a month during the next three months to the British zone in Germany. If they were unwilling or unable to do so, the British Government could not, after having rationed the bread of the British people, divert further stocks from this country to supplement the ration in the Western zone of Germany.

Mr. Strachey asked the United States government to consider in time whether it was not a paramount interest of theirs as of ours that at any rate the 1000-calorie ration scale should be maintained.

OTHER VIEWS

Mr. R. S. HUDSON, the principal speaker for the Conservative Opposition, described Mr. Strachey's speech as a sombre one. It was quite clear from the figures given that the real reason why Mr. Strachey had introduced bread rationing was that he was afraid that if any one of the numerous assumptions he had mentioned to the House did not come off he would be compelled, at some time at the end of August or the beginning of September, to put the screw on and cut these rations still further. It was expecting a great deal, in view of our recent experiences in the United States, to hope that they would succeed over three months in maintaining unbroken a supply at that rate, and for that reason he quite understood why Mr. Strachey had taken his decision. But, as introduced, the rationing scheme would not save an appreciable quantity of wheat. It was arguable whether more wheat had not already been wasted than would be saved during the first three months of rationing. The Opposition still believed that with reasonable foresight the necessity for bread rationing could have been avoided. It was likely, he thought, to break down in operation. But the Government had decided on its introduction, and the result would be that, if any of these assumptions did not come off, with the exception of Germany and Austria we should probably be about the worst-fed white nation in the world.

(The last sentence of Mr. Hudson's speech was characterised as "utter nonsense" by Mr. Strachey and there ensued a noisy and angry scene during which the supporters of the Government repeatedly called on Mr. Hudson to withdraw the statement, which, however, he refused at this stage to do.)

Mr. CLEMENT DAVIES, from the Liberal benches, said that in the position which had now been disclosed by the Minister of Food, bread rationing was inescapable. The fact that Mr. Strachey had made this very serious statement had shown the necessity for the public being taken into the confidence of the Government long ago. No Government had the right to come to a decision in private which affected the well-being of the people of this country without disclosing all the facts and figures which had influenced their decision. (Cheers.)

Mrs. BARBARA CASTLE said it would appear that Mr. Hudson had not read the Government's white-paper on the world food shortage published last April. This

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document showed that the population of the United Kingdom as a whole was then enjoying a diet of 2850 calories per head per day, or 93–95% of our pre-war diet. She understood that bread rationing would reduce that diet by no more than 50 calories per day, where any reduction did take place. That compared with a diet in France, Belgium, Holland, and Norway of 2300–2500 calories per head per day, which was 75–80% of the pre-war level. UNRRA countries—Greece, Yugoslavia, Czechoslovakia, and Italy—dropped spectacularly to below 2000 calories, or 70–75% of the pre-war level. As for ex-enemy countries, they were now down to 1000 calories a day, eking out an existence at about a third of their pre-war consumption. If this country was to get through the next few difficult months now was the time to encourage our people to "hold on." Deliberately to spread alarm and despondency on the basis of rumours and claims that could not be substantiated was nothing less than an act of treachery by a political party which for years had prated of patriotism.

Sir ARTHUR SALTER said that the Government had now given to the House a great deal of the information for which they had been pressed for some time. What a tragedy it was that that information had not been given earlier. By withholding it they had lost the immense benefit to this country and the world which would have resulted if the true situation had been realised, so that the action which was now being taken tardily and with great difficulty might have been taken many months earlier and we might have had the benefit of the consequent saving throughout all these critical months. Part of the Government's case was not only strong but unanswerable. He dissented from any suggestion that the contributions that had been made to aid distress and famine areas in Europe and elsewhere were excessive—quite the contrary; what had been contributed was lamentably below the real needs of the situation.

The case for the Opposition was finally summed up by Mr. EDEN, who said that the situation revealed by Mr. Strachey was much more serious than anything that he had anticipated, and he gave the Government the full benefit of that. But it was a great misfortune that the situation was not made plain to the public long since. Who could doubt that, if American opinion had known to what straits this country was being reduced and how narrow was our margin, it would have been influenced by that knowledge? (Opposition cheers.) As regards the food position in the British zone in Germany, it had to be borne in mind that though the present position seemed pretty bad this country had had six years of pretty hard rationing, and certainly a large section of the German people had lived pretty well on the supplies from occupied countries throughout the war. It was clear from what the Minister had told the House that some restriction of consumption was necessary, but the House had not been told how the rationing scheme was going to work. When the scheme was prepared and laid before the House there would be an opportunity to pray against it and the Opposition would decide whether they would vote against the order or not. In the meantime the Opposition could not tell the Government that they approved of the methods of administration which had brought matters to this pass. There had been order, counter-order, and disorder in the administration of these food problems. The major error had been not to inform the House of Commons, the country, and the world about the facts. (Opposition cheers.) If the Opposition had not asked for this debate the House would still be in ignorance of the facts. Therefore the Opposition would be obliged to challenge a division on the Ministry of Food vote.

Mr. STRACHEY, closing the debate for the Government, reverted to Mr. Hudson's remark at the end of his speech and quoted again the figures from the white-paper on the world shortage in refutation of the right hon. gentleman's allegation. To show the extent to which Mr. Hudson was exaggerating, to use no stronger term, it would be necessary, said Mr. Strachey, for the entire bread and cereals ration of this country to be done away with altogether, and there would have to be no bread at all available to the people of this country, to bring us down to the lowest levels of the worst-fed countries in Europe today.

Mr. HUDSON said there had been a genuine misunderstanding which it was important to clear up. If Mr. Strachey assured the House and the country that there were sufficient stocks, and would be sufficient stocks, to avoid any reduction in the rate of the ration which he proposed to bring in on July 21, then quite clearly he (Mr. Hudson) was under a complete misapprehension and he withdrew his remarks.

Mr. STRACHEY: In that period, yes. If this harvest and the next harvest failed all over the world, we did not know. That disposed of the matter. Mr. Hudson would be the last man to wish a statement like that to go out to the world when he must realise that it could be used in the most damaging way not to this Government but to this country. (Cheers.)

Continuing, Mr. Strachey announced that the Ministry of Food had purchased and had in their possession in Argentina and in Brazil over 300,000 tons of coarse grains. As to the rationing scheme itself, any such scheme was irksome to administer, but an attempt would be made to make it as little irksome as possible. He proposed to make three changes in the Meals in Establishments Order. It was at present perfectly possible while serving only three courses to charge any amount of money for them if they were served in a private room. So he proposed to make a charge of 2*s.* 6*d.* per head maximum for the use of a private room. Secondly, if bread was to be rationed it became a scandal that bread could be taken in restaurants quite easily. He therefore proposed that in all catering establishments the bread should be made one of the three courses allowed. During this season when herrings were plentiful he was exempting herrings from being a main course. In conclusion, Mr. Strachey agreed in general with the main line of argument of Sir Arthur Salter. He believed that the very maximum of precise information on the situation should be given and on the situation in Western Germany. It was most important that they should keep that before the mind and conscience of the world and he would endeavour to do that in the most effective possible way.

Mr. EDEN moved to reduce the Ministry of Food vote by £5, and on a division the motion was negatived by 433 votes to 178.

Food in the British Zone

A question by Mr. V. J. COLLINS on the situation in Germany drew a statement from Mr. J. HYND, chancellor of the Duchy of Lancaster, the Minister responsible for the British zone. It has for some time been impossible, he said, to maintain stocks of bread grains in the British zone which would ensure regular distribution and prevent local breakdowns in supply. At present no more than four or five days' supplies are in hand on any given date. Distribution of ration foodstuffs to the normal consumer is on the basis of 1050 calories daily, which is less than half the amount adjudged to be necessary for maintaining normal resistance to disease.

Naturally, said Mr. Hynd, food-production had been encouraged in every possible way, and in order to see that farmers deliver their produce in accordance with regulations, inspection committees have made three inspections of farms. The first, made before the main harvests were brought in last year, was to assess the amount likely to be obtained; each farmer was given a quota which he had to deliver. The second inspection was made after deliveries commenced, to ascertain whether any deliveries had been below estimates. The third inspection was made recently for the purpose of "scraping the bin." Each inspecting committee was accompanied by a German trade-union representative, and at the threshing period an inspector stood by each threshing machine to check the grain passing through. The final inspection brought only 15,000 tons in all, and it must be assumed that we have now virtually exhausted this source of supply. All the evidence indicates a high degree of coöperation on the part of the farmers, and a satisfactory absence of sabotage or falsification of stocks.

A tripartite nutritional investigation has been undertaken in the three western zones.[1] The findings show that the effects of the ration cuts last March are now becoming apparent, and that the population is in fact seriously

1. See *Lancet*, July 6, p. 22.

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underfed. While it is inevitable that in such conditions there should be instances of illegal transactions in food, there is no black market in the sense that substantial illicit meals are available in hotels and restaurants. Any illegal transactions in food that can take place are not on a scale to affect the general level of consumption. The assistance of three or four German democratic parties in the zone, and of the churches as well, has been secured in a common appeal to people in all districts for a voluntary surrender of any small amounts of food they may have in the cupboards to assist the very difficult situation arising in the big towns.

Mr. R. S. HUDSON: In view of the very critical cereal stock position which the Minister has just disclosed, may I ask what has happened to the arrangements that were made by the Lord President of the Council (Mr. Herbert Morrison) on his recent visit to America by which we understood the Americans were to ensure that adequate supplies of bread grains were available in the United States and British zones?

Mr. HYND: The arrangement that was reached with the Americans by the Lord President of the Council provided for sufficient bread grains to come forward until the end of September to maintain the present calorie ration of 1050, which is of course not adequate but which was the position provided for. The very serious stock position, to which I referred, is an interim position pending the arrival of the bulk of those stocks. Already more than 100,000 tons have arrived, but as we had already run down almost completely the pipe-line which existed when that agreement was reached there is no pipe-line available from these arrivals, which are being used to meet current consumption and distribution. We have, in fact, only been able to keep the position fluid, pending further arrivals, by the fact that we are in a position now to take certain measures which could not be taken in normal conditions—namely, the requisitioning of transport and the collection of small stocks from one part or another as a kind of war operation. It has been an emergency operation and we have been able to save the situation until now, but it is evident that until the bulk of the American shipments arrive we shall be in a very difficult position.

QUESTION TIME

National Health Service and Choice of Doctor

Mr. JOHN MCKAY asked the Minister of Health if he would give an assurance that under the National Health Service Bill patients would have a free choice of doctors and not be restricted to the doctors covering the district in which the patients lived and who had made a contract of service under the National Health Service Act.—Mr. A. BEVAN replied: Yes, Sir. It is intended to give patients the widest possible choice among practitioners taking part in the new health services, but the details of the way in which this can be arranged must be a matter for regulations.

Medical Treatment in Mining Industry

Mr. WILLIAM FOSTER asked the Minister of Fuel and Power if he would make a statement of the progress made in the establishment of a medical service scheme at the collieries in the mining industry; the number agreed upon and the number actually commenced.—Mr. H. GAITSKELL replied: Arrangements for the erection of 5 experimental types of medical treatment centres are completed, and it is hoped that all will be built and in operation by the end of the year. The construction of permanent centres, following experience with the experimental types, will naturally take much longer; and meanwhile suitable first-aid or other accommodation is being adapted at selected collieries for use as centres. The immediate aim is to have about 50 adapted centres in operation as soon as possible.

Holiday Milk for School-children

Mr. V. J. COLLINS asked the Minister of Food whether arrangements could be made for school-children to be granted an allocation of milk at their homes during the summer holidays equivalent to the allowance which they now received at school.—Mr. J. STRACHEY replied: I would very much like to have made this arrangement, but my department has spent a considerable time trying to devise a workable scheme, and I am reluctantly driven to the conclusion that it cannot be done. Arrangements do exist to enable school-children to have their school milk during the holidays when they can collect it at central schools or other suitable places, but little advantage has so far been taken of this.

Obituary

GEORGE JESSEL

M.A., D.M. OXFD, D.P.H.

Dr. George Jessel, a consultant tuberculosis officer of the Lancashire County Council, died suddenly on June 23 at the age of 63. He was well known and distinguished for his work in tuberculosis.

Educated at University College, Oxford, where he was a mathematical scholar, he graduated in medicine in 1909 from the London Hospital, where he won the Price scholarship and the Anderson prize in clinical medicine. After working at the Hospital for Sick Children, Great Ormond Street, he spent two years in private practice. He took the D.P.H. at Manchester University in 1913, being first man of the year, and his D.M. at Oxford in 1917.

Ernest Carr

Dr. Jessel started his work in tuberculosis in 1913, when he was appointed tuberculosis officer for the combined county district and county borough of Wigan. He was also acting M.O.H. of Wigan from 1914 to 1917. In 1919 his joint appointment with Wigan ceased and he became a full-time consultant tuberculosis officer of the Lancashire County Council. For 33 years he was in charge of dispensary area 4—containing a population of about 370,000, with dispensaries at Eccles, Leigh, Farnworth, Stretford, and Pendlebury—which included the Peel Hall Pulmonary Hospital, of which he was the visiting medical superintendent. There his work was of a particularly high order, and it would be difficult to imagine a more efficiently managed institution. He introduced a system of graduated work and exercise for the patients with the dual object of varying the monotony of sanatorium life and of benefiting the patients both physically and mentally. In his own words: "The tuberculosis officer who aims at realising the ideals of his office must undertake somewhat the rôle of schoolmaster and cleric as well as medical specialist." And no mean part of his reward lay in the volume of appreciation of the patients. He was a strong advocate of treating the family of the tuberculous patient as the unit.

For many years Dr. Jessel was connected with the north-western branch of the Society of Medical Officers of Health and the N.W. Tuberculosis Society, and he was a past-president of both these bodies. He took a great interest in the Joint Tuberculosis Council of England and Wales; for a long time he was the honorary treasurer and at the time of his death was a vice-chairman. He served on many committees of the council, where his wide knowledge of tuberculosis was of immense value in the production of reports and publications on various aspects of the subject.

His life was devoted to the study of tuberculosis and the many problems connected therewith. Tremendously keen on his work and full of energy, he never spared himself. As a consultant he will be sorely missed by the medical practitioners in his area.

Dr. Jessel leaves a widow, a son, and two daughters.

F. C. S. B.

EDGAR HENRY WILKINS

M.B. DUBL., D.P.H.

Dr. E. H. Wilkins, who died at Birmingham on June 13, after a short illness, was a valuable member of the school medical service. He was born in Dublin, where his father was headmaster of the High School, and his uncle, Prof. George Wilkins, was a leading personality at Trinity College. He himself graduated M.B. at Dublin in 1912. After qualifying, he spent ten years in New Zealand, where he worked with Sir Truby King, and became director of the school medical service at Wellington. On his return to England he was appointed

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to the school medical staff at Birmingham, where he served for the rest of his life.

"Wilkins was interested in all phases of public-health work," writes W. R. D., "but his chief enthusiasm was school medicine. He had all the keenness of the pioneer, without the fanaticism. All his contributions were characterised by a disciplined thoroughness, and he was invariably tolerant to divergences of opinion. At the time of his death he was engaged on a work in which he hoped to describe school medicine as he saw it. It is to be hoped that this work will be published; his many friends will be glad to possess it." To his school work, says J. R. M., he brought not only sound clinical knowledge, but that quality of deep personal interest in the patient which alone can bring medical work to its fullest fruition. "His daily work was in a crowded industrial area, where his influence was widely appreciated and where his loss is deeply felt by the parents of the children to whom he devoted his energies and talents, as also by the teachers of schools under his care. He was endowed with the restless, inquiring mind of the born research worker, and, no matter how busy he might be in his daily work, invariably had some subject of research in hand."

Dr. Wilkins was a keen athlete and a successful racing cyclist and for many years he climbed the mountains in Wicklow and in Wales. He was a close student of chamber music, annotating numerous scores, and an enthusiastic gardener and carpenter. He found the greatest pleasure in his home, where his wife and family shared all his interests.

Appointments

CLARKE, L. P., M.R.C.S.: clinical pathologist, Rotherham.
GARTSIDE, I. B., M.R.C.S.: specialist pathologist, Clayton Hospital, Wakefield.
GILMOUR, A. A., M.D. Glasg.: asst. county M.O., Ipswich.
RIGBY, J. P. V., B.M. Oxfd: asst. tuberculosis officer, Lewisham.
TUNSTALL-BEHRENS, MORWENNA M., M.B. Camb.: casualty M.O., Hospital for Sick Children, Great Ormond Street, W.C.1.
TURNER, J. W. ALDREN, D.M. Oxfd, M.R.C.P.: neurologist, St. Bartholomew's Hospital, E.C.1.
WATERSTON, D. J., M.B.E., M.B. Edin.: resident surgical officer, Hospital for Sick Children, Great Ormond Street, W.C.1.

*University College Hospital, W.C.*1.—The following appointments are announced:—
BAMBER, G. W., M.D. Camb., F.R.C.P.: asst. physician to skin dept.
COPE, R. W., M.R.C.S., D.A.: anæsthetist.
DAVIES, D. R., M.B. Lond., F.R.C.S.: asst. surgeon.
EBSWORTH, J. D., M.R.C.S., D.A.: anæsthetist.
MATTHEWS, D. N., O.B.E., M.CHIR. Camb., F.R.C.S.: asst. surgeon.
SCHLESINGER, BERNARD, O.B.E., M.D. Camb., F.R.C.P.: asst. physician to children's diseases dept.

*Royal Free Hospital, W.C.*1.—The following appointments are announced:—
DOLLAR, JEAN M., M.S. Lond., F.R.C.S., D.O.M.S.: ophthalmic surgeon.
GARDNER, FRANCES, M.D. Lond., M.R.C.P.: asst. physician.
GRAY, CHARLES, M.B. Manc., F.R.C.S.: orthopædic surgeon.
HILL, GLADYS, M.D. Lond., F.R.C.S., F.R.C.O.G.: obstetrician and gynæcologist.
QVIST, GEORGE, M.B. Lond., F.R.C.S.: asst. surgeon.

King Edward Memorial Hospital, Ealing.—The following appointments are announced:—
CROSLAND, J. H., M.R.C.S.: M.O. in charge of physiotherapy dept.
MURRAY, C. J. B., M.S. Lond., F.R.C.S.: second surgeon.
TREISSMAN, HERMAN, M.B. Lond., F.R.C.S., D.O.M.S.: ophthalmic surgeon.

Royal Hampshire County Hospital, Winchester.—The following appointments are announced:—
GOLDEN, G. N., M.B. Lond., F.R.C.S.: orthopædic and traumatic surgeon.
INGRAM, P. W., M.B. Aberd., F.R.C.S.E.: asst. surgeon.
MIDGLEY, GORDON, M.R.C.S., D.L.O.: asst. E.N.T. surgeon.
NEUSTATTER, W. L., M.D. Lond., M.R.C.P.: psychiatrist.
ROBERTS, R. I., M.R.C.S., D.M.R.: M.O. in charge of X-ray dept.
RUBIN, JACK, M.B. Cape Town, F.R.C.S.E.: asst. surgeon.

Royal Hospital, Wolverhampton.—The following appointments are announced:—
BENISON, R. L., F.R.C.S.: surgeon.
BROWN, D. M., M.B. Birm.: anæsthetist.
CAMPBELL, G. W., L.R.C.P.E.: anæsthetist.
DAVIES, J. V. S. A., M.R.C.P.: physician.
HEATH, NEWTON, F.R.C.S.E.: asst. orthopædic surgeon and fracture officer.
HUTCHINSON, W. R. S., F.R.C.S.: surgeon.
JONES, H. E., M.R.C.P.: pædiatrician.
OAKLEY, D. E., M.B. Camb.: dermatologist.
RICKARDS, J., M.R.C.S., D.A.: anæsthetist.

General Hospital, Nottingham.—The following appointments are announced:—
GLASS, E. J. G., M.B. Edin., F.R.C.S.E., D.L.O.: aural surgeon.
PROCTER, J. D., M.D. Camb., M.R.C.P.: physician.
TWORT, R. J., M.D. Aberd., M.R.C.P.: asst. physician.
WHIMSTER, W. S., M.D. Lond., M.R.C.P.: physician.

Colonial Medical Service.—The following appointment has been announced:—
HOUSTON, Captain G. F., M.R.C.S.: M.O., Nigeria.

Notes and News

DIPLOMA IN INDUSTRIAL HEALTH

A FEW months ago a diploma in industrial health (D.I.H.) was instituted by the Society of Apothecaries.[1] The Conjoint Board of the Royal Colleges of Physicians and Surgeons have now issued regulations for a similar diploma. Courses of study and practical instruction followed by an examination in two parts have been prescribed, the scheme bearing some resemblance to the curriculum and examinations for the diploma in public health. Exemption from the first part of the examination is granted to holders of a certificate in public health.

To secure admission to part I of the examination candidates are required to produce a certificate of satisfactory and regular attendance on a course of study extending over 10 weeks whole-time or 5 months part-time, covering in either case not less than 300 hours. The course for part II is made up of 350 hours devoted to systematic and practical instruction, the latter to include attendance at a skin clinic, an ophthalmic clinic, and the accident department of a recognised hospital. Visits must be paid to industrial establishments, docks, shipyards, and mines, and 100 hours must be spent at works surgeries under the instruction and supervision of experienced industrial medical officers. Conditions of admission to the examination may be modified at the discretion of the committee of management in the case of a candidate who has held whole-time appointments as an industrial medical officer for not less than three years; or who holds a D.P.H.; or whose experience during not less than ten years appears to the committee to be adequate.

The subjects to be studied are given in detail and include, in part I, the functions of central and local authorities and voluntary organisations; social security, relief agencies, and international health organisations; statistics; the sources and control of infection; the influence of environment and heredity on health; physical education; and the principles of health education. For part II the structure of industry in all its aspects must be studied, in addition to legislation relating to industrial health and the organisation of health services in industry. Further subjects are applied physiology and psychology in industry, the placement of workers, industrial accidents, rehabilitation, and resettlement in industry. Attention must be given to special problems relating to the employment of women and young persons. And the candidate is also required to know something about occupational diseases and disabilities.

OPENING OF PRESTON HALL EXTENSION

THE Orchard Pavilion, an extension of the British Legion village at Preston Hall, was opened by Mr. George Isaacs, Minister of Labour, on July 3. The extension will be used for the employment of ex-Service tuberculous patients in the toy-making industry. Mr. Isaacs said that it was now recognised that medical care, rehabilitation, and employment were all parts of an integrated process. Employers had coöperated in accepting the statutory 2% of disabled men, and the proportion would soon be raised to 4%. The Disabled Workers' Corporation had opened two factories, and had its eyes on some forty other places. It was hoped that the great industries would subcontract their work to the homes of disabled workmen. So far, more than 500,000 were registered under the Disabled Persons Act, and 23,000 of these were victims of pulmonary or surgical tuberculosis.

EPSOM COLLEGE

THE 93rd annual report of the council of the Royal Medical Foundation of Epsom College tells of great difficulties. High costs last year left the school accounts with a loss of some £1175—an experience shared by most schools which, like Epsom College, refrained from raising their fees during the war. The health of the boys has been good apart from a series of epidemics in the Lent term of this year. Though there was a lower proportion of passes than usual in the first M.B. examination, results in the Higher Certificate examination were good, the number of distinctions being the biggest on record, and the high standard in gaining open scholarships at Oxford and Cambridge was fully maintained. Sports records have been creditable. The average number of boys in 1945 was 441, but numbers have continued to rise and this term there are 476. The council have at last found it

1. See *Lancet*, 1945, ii, 451, 499.

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necessary to raise fees, which are now as follows: doctors' sons, £170 yearly for boarders and £65 for day-boys; dentists' sons, £175 for boarders and £70 for day-boys; other boys, £180 for boarders and £75 for day-boys. The actual cost works out at £169 15*s.* yearly for a boarder and £65 for a day-boy. During the year bequests for special purposes amounted to £1733, and for general purposes to £998; the Medical Insurance Agency gave £352 to the Squire Sprigge scholarship fund, and £45 to the Purnell trust fund. Subscribers are reminded that they can nearly double their contributions without cost to themselves by entering into a covenant to pay a subscription for seven years.

A LIST OF SPEECH THERAPISTS

THE Board of Registration of Medical Auxiliaries has just published a register containing the names and addresses of qualified speech therapists, and doctors are urged in the covering letter to refer to this register when engaging a speech therapist either for hospital appointment or in private practice. The recognised qualifying body is the College of Speech Therapists, and all those on the register are either licentiates or fellows of the college. The 210 practising therapists are well distributed about the British Isles. Copies of the register will be supplied free to doctors, hospitals, and local authorities on application to the registrar of the Board of Registration of Medical Auxiliaries, B.M.A. House, Tavistock Square, London, W.C.1.

University of Oxford

The following degrees were conferred on June 27:

M.D.—Charles Hollins and C. A. Hinds-Howell.
B.M., B.Ch.—J. R. Nassim (in absence).

University of Cambridge

At congregations on June 25, the following degrees were conferred:

M.D.—Raymond Daley and A. E. de la Tour Mallett.
M.B., B.Chir.—G. S. Ostlere (by proxy).

Among appointments to take effect from Oct. 1 are those of Dr. R. I. N. Greaves as reader in bacteriology, Dr. R. Nigam as demonstrator in anatomy, Dr. K. C. Dixon as demonstrator in chemical pathology, and Dr. J. A. R. Miles and Dr. G. R. E. Naylor as demonstrators in pathology.

University of Birmingham

At a congregation on July 5, the following degrees were conferred:

M.D. (ex officio).—Prof. Solly Zuckerman, F.R.S.
M.D.—A. E. Chaplin, C. R. St. Johnston, and Yvonne J. Williams.
M.B., Ch.B.—P. G. Bevan * and Jeannie E. Roulston (second-class honours); E. J. Allaway, Barbara M. Ansell,† J. R. Baker, W. I. H. Bourne, John Butler, P. Y. Carlyle, Pamela J. Chappell, Fay P. S. Cull, E. J. L. Davies, S. P. Dawson, Rosemary Dearden, W. B. L. Downing, Jean M. M. Dunn, Margaret J. Dutton, Jeanette G. Eveson, Barbara M. Finch, Frances A. Fouracres, D. M. Garratt, Joan E. Garside, N. L. Gilburn, F. R. Goodwin, P. H. T. Hall, Norah K. S. Howkins, P. J. L. Hunter, G. A. Jeffery, Jose V. Keats, H. M. Kent, D. E. T. Laird, John Lapper, Sylvia E. Leather, D. M. Maxwell, Rosemary G. Mitton, John Moss, G. C. Richards, Philip Rigby, J. M. D. Roberts, T. B. Stirling, J. E. Tremlett, G. M. Turner, Evelyn D. Watkins, F. E. Webb, K. M. Williams, J. T. H. Wise, Colin Wood, Mary P. Woodhouse; and Constance M. A. Bachtin, D. P. Fitzgerald, and G. A. Readett (in absentia).

* Distinction in medicine. † Distinction in surgery.

University of Manchester

At recent examinations the following candidates were successful:

M.B., Ch.B.—E. Margaret Bailey, B. N. Catchpole, D. A. N. Hoyte, Donald Longson, John Marshall, and K. A. Rowley (with second-class honours); Ruth A. Ainsworth, R. H. Broughton, W. B. Browne, D. A. Chadwick, C. P. Chivers, J. F. Cogan, J. K. Craig, Annie Cross, K. S. Daber, A. M. Davies, I. M. Gow, H. G. Herrmann, H. P. Hilditch, C. B. Hindley, D. P. Howarth, E. V. Hulse, Ephraim Jaffe, P. D. Kelsall, P. B. Lacy, Theresa P. Lee, Eric Levy, E. S. Lomas, Winifred M. McIlwrick, D. A. MacLeod, N. S. Moores, J. A. Noblett, Mathoor Panikkar, I. W. Payne, Edward Priestley, D. W. Purser, Anne R. Quinn, R. G. Rooney, V. E. Sherburn, K. D. Stewart, Roberta A. Stewart, J. B. L. Taylor, J. H. M. Thomas, Hilary M. Thompson, and H. W. Wyile.

University of Liverpool

The following were successful in recent examinations:

M.D.—H. Cantor, Eva V. Cooper, and J. B. Hannah.
Ch.M.—W. R. Hunter and R. A. C. Owen.
M.B., Ch.B.—G. H. Daglish, Joan Evans, R. L. Goldson, Ailsa M. Heath, Vivien P. Helme, Maureen M. Hoey, D. T. L. Hughes, G. C. Hunter, H. S. Levy, F. W. Sheffield, Dorothy E. M. Thomas, Maureen M. Tickle, and E. H. Wilson.
D.P.H.—G. P. Barclay, P. L. Bernard, H. R. G. Davies, T. B. D'Costa, E. C. Dymond, Thelma R. Gaunt, Eirwen M. Jones, A. E. Roberts, J. H. M. Tilley, Gwendoline Williams, and W. R. Williams.

University of Durham

On June 26 the honorary degree of D.C.L. was conferred on Lieut.-General Sir Alexander Hood, and the honorary degree of D.SC. on Prof. S. P. Bedson, F.R.S.

The following degrees were conferred on June 26 and 27:

M.D.—E. J. Field (in absentia); H. A. Bowes, G. A. Clark, William Dunn, John Simpson, and Malcolm Thompson.
M.S.—F. D. Hindmarsh.
M.B., B.S.—G. W. Anderson, I. S. Bruce, Frank Fleming, and H. A. Scott (in absentia); Harold Baker, H. C. Butterworth, D. V. Cashman, J. H. Davidson, W. R. Dodds, Betty B. Glansfield, Margaret M. Harley, J. R. Horler, Eva G. Maughan, J. A. S. Metcalf, M. B. Moore, Charles Neubauer, Basil Poole, H. E. Robson, P. N. Robson, Paul Szekely, Dorothy L. Taylor, Denis Whitehouse, and F. W. G. Wolff.

Queen's University, Belfast

At recent examinations the following candidates were successful:

M.D.—J. H. Scott (with gold medal); G. F. Adams, W. H. Hood, and J. A. Smiley (with high commendation); J. M. Barber and J. H. D. Millar (with commendation); J. M. Bears, A. M. Blackstock, A. A. Gailey, George Gregg, R. A. Pyper, R. H. F. Smith, and E. C. Torrie.
M.B., B.Ch., B.A.O.—S. T. Armstrong, P. K. Boylan, E. J. H. Byrne, A. C. Darrah, Charles de Largy, Cristina M. Dornan, Irene M. Emerson, Mary F. Gregg, Hugh Hegan, T. D. Huriott, A. L. Hyman, W. T. Joseph, Dorothea B. Keith, David Kernohan, B. U. Killen, H. M. McClatchey, Dorothy McDowell, S. P. McGibbon, Doris A. McKinley, P. G. MacLarnon, Bernard Murray, John Patterson, V. R. G. Poots, James Rawe, J. E. Reid, W. B. Rodgers, Kurt Sax, W. J. W. Speedy, Vera A. Sullivan, C. A. K. Tully, Alice M. Williams, and Gordon Wolfenden.

University of Dublin

On July 3, at the school of physic, Trinity College, degrees were conferred on the following:

M.D.—C. W. Bradfield, D. P. Burkitt, R. H. Simon, and R. T. Towson.

M.B., B.Ch., B.A.O.—A. B. Boyle, R. P. Brown, T. T. Chapman, C. R. Crawford, D. F. Doherty, R. G. Emerson, P. B. B. Gatenby, Hilary Gruson, Jean F. W. Henry, John Higginson, Nathan Jaswon, Ethel O. Johnston, Joan H. Kelly, W. R. Lamb, J. R. Lowe, J. B. H. Lusk, H. F. McElligott, F. H. Moore, F. P. Myles, O. M. O'Malley, R. D. H. Parker, R. M. Pritchard, Isidore Sevitt, O. M. P. Tobias, Mona C. Warren, R. J. S. Weir, and K. H. M. Young.

Royal College of Surgeons of England

Election to the Council.—On July 4 three fellows were elected to fill the vacancies caused by the death of Sir Girling Ball and the retirement in rotation of Mr. Victor Bonney and Mr. Ernest Finch.

The result of the poll was as follows:

	Votes
E. F. FINCH (Sheffield)	625
R. P. SCOTT MASON (Birmingham)	379
JULIAN TAYLOR (University College)	364
R. OGIER WARD (St. Peter's)	356
A. LAWRENCE ABEL (Princess Beatrice)	341
R. H. MAINGOT (Royal Free)	288
GRANT MASSIE (Guy's)	276
A. E. PORRITT (St. Mary's)	276
J. B. HUME (St. Bartholomew's)	262
Sir STANFORD CADE (Westminster)	204
H. C. EDWARDS (King's College)	196
W. H. C. ROMANIS (St. Thomas's)	187
N. C. LAKE (Charing Cross)	166
W. J. FERGUSON (West Middlesex)	94

In all 1484 fellows voted; in addition 12 votes were found to be invalid.

Order of the Hospital of St. John of Jerusalem

Promotions and appointments recently announced include:

Knights.—Major A. B. Cardew, M.C., M.B.; T. H. Leggett, M.D., R.C.A.M.C.

Commanders.—Norman Jennings, M.B.; Major J. A. Mackenzie, M.B.; Norman Manson, M.B.; W. P. Kennedy, L.R.C.P.E.; H. G. Ramsbottom, L.R.C.P.E.; Lieut.-Colonel R. W. M. Strain, M.D.; Major J. F. Hamilton, M.D.; Lieut.-Colonel C. G. Booker, M.B.; Miss Margaret E. Douglass, M.D.

Officers.—N. S. B. Vinter, M.B.; C. S. C. Prance, M.B.; H. C. M. Williams, O.B.E., M.R.C.S.; H. F. Hollis, M.B.; Colonel John Revans, M.B.E., I.M.S.; Lieut.-Colonel S. LeRoy Spicer, M.D.; K. E. Dowd, M.D.; C. A. Gauthier, M.D.; William Bain, M.B.; D. J. Nicol, M.C., M.B.; Captain R. S. Harper, M.R.C.S.; T. W. A. Gray, M.D.; S. H. Keshen, M.D.; Surgeon Lieut.-Colonel H. R. L. Casolani, M.D.; Colonel T. D. Inch, O.B.E., M.C., F.R.C.P.E.; C. G. Roberts, M.D.; Major Phineas Weiner, M.R.C.S.; L. A. Sigurdson, M.D.; H. J. Porter, M.D.; G. E. Dragan, M.D.; Colonel G. R. McRobert, O.I.E., I.M.S.; V. T. Camilleri, M.D.; Miss Gladys E. Wilkinson, M.R.C.S.; Mrs. Mary Rutledge, M.B.; Miss Daphne W. Dear, M.R.C.S.; Mrs. Cecily Porter, M.B.; Miss Muriel J. L. Frazer, F.R.C.S.

Return to Practice

The Central Medical War Committee announces that Mr. P. H. NEWMAN, D.S.O., M.C., F.R.C.S., has resumed civilian practice at 66, Harley Street, W.1. (Tel.: Langham 3808).

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London and Counties Medical Protection Society

At the annual meeting held in London on July 3, Sir Ernest Rock Carling, who was re-elected president, spoke of the steady increase in membership, and of the new activities of the secretary, Dr. R. W. Durand, since his return from the Forces, including especially the help he was able to give to Service members. A review of the problems referred to the society showed that time and again doctors were in difficulties because they did not keep accurate, precise, and dated records —an essential part of their work. When records had not been kept a good case could often be made to look like a bad one. Mr. G. F. Stebbing, chairman of council, gave high praise to the work of Miss K. E. Remington (assistant secretary) and Mr. S. Rayner (accountant and financial secretary) in the London office during the war: there was not a single day on which the premises were closed, and not a single meeting of the council had to be postponed because the business was not ready. Mr. W. M. Mollison, the treasurer, paid a similar tribute, and Mr. Le Brasseur, solicitor to the society, foretold that when the profession entered "the troubled waters of nationalisation" there would be more occasions than ever when members would need help and advice. Like the president, he thought that in the new National Health Service there would inevitably be many complaints against medical men, who would more than ever require professional protection.

Society for Relief of Widows and Orphans of Medical Men

At a meeting of the directors on July 3 with Dr. A. Ware, senior vice-president, in the chair, the death was reported of a widow who had been receiving relief for 35 years and had had £2475 from the society in grants for herself and two children. The sum of £1937 was voted for half-yearly grants to 53 widows. Members who have been serving in H.M. Forces but are now demobilised are asked to communicate with the secretary and give their present address; this is important because until their arrears of subscriptions are paid they are not considered members of the society. Membership is open to any registered medical man resident within 20 miles of Charing Cross, and relief is limited to the widows and orphans of deceased members. The secretary's address is 11, Chandos Street, Cavendish Square, W.1.

Scarcity of Man-power and Woman-power

In his presidential address to the National Conference on Maternity and Child Welfare on June 28, Mr. Aneurin Bevan, Minister of Health, said that the Government are deeply concerned about trying to provide for every family in Great Britain a separate household as soon as possible: "there is no more important part of preventive medicine than the provision of adequate housing." The cities are so articulate that the rural population is sometimes not heard, but in very many parts of Great Britain some of the chief sources of bad health consist in no adequate piped water-supply and no adequate sewerage system. As soon as materials and man-power are available the schemes of local authorities will be carried out. "Everywhere you turn there are more jobs to do than hands to do the jobs," but "I would rather have the headache of finding men for jobs, than the heartache of finding jobs for men." This problem of the inadequacy of man-power and woman-power, said Mr. Bevan, is expressed most tragically in the absence of a sufficient number of midwives. It is no use adding to the number of maternity beds unless the staff can be found. "We are doing our very best to try and increase the staff, the number of midwives, nurses, and domestics. We are trying to bring in midwives from countries abroad where the standards of training are equal to our own. We are also trying to persuade midwives who are doing other nursing work to come back to midwifery. And I am trying to find out why it is that so many women who acquire midwifery qualifications do not practise midwifery." For mothers who prefer to have their babies at home one of the difficulties is to provide sufficient domestic help in that domestic crisis. "Here again we are hoping to get from abroad increasing numbers of women who will be able to add to the domestic help available in this country."

PENICILLIN THERAPY.—Messrs. Boots Pure Drug Co. Ltd. have compiled a useful sixty-page booklet summarising the properties, indications, methods of administration, dosage, and clinical applications of penicillin, with a bibliography of the main publications. Obtainable, free of charge, from the Medical Department at Station Street, Nottingham.

Medical Diary

JULY 14–20

Tuesday, 16th

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.1
5 P.M. Prof. C. A. Lovatt Evans, F.R.S.: Outlook of Physiology Today. (Bertram Louis Abrahams lecture.)

Wednesday, 17th

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
5.30 P.M. *Proctology.* Dr. Cuthbert Dukes: Peculiarities in the Surgical Pathology of Malignant Disease of the Anorectal Region. Mr. Kenneth James: Surgical Complications of Amœbic Dysentery.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION
10.30 A.M. (Royal College of Physicians, 9, Queen Street, Edinburgh.) Annual meeting.
2 P.M. Prof. D. K. Henderson: Experientia docet. (Presidential address.)

Thursday, 18th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
5 P.M. Sir Frank Colyer: Positional Variations in Animals. (Charles Tomes lecture.)

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION
10 A.M. Annual meeting, continued. Prof. Alexander Gray, Prof. James Drever, Mr. D. Crichton-Miller, Dr. T. Ferguson Rodger: Education in Relation to Psychiatry.
2 P.M. Dr. W. Norwood East, the Lord Justice-Clerk (Rt. Hon. Lord Cooper), Prof. Sydney Smith, Dr. W. M. McAlister: Legal Aspects of Psychiatry.

TUBERCULOSIS ASSOCIATION
2 P.M. (Sir William Dunn School of Pathology, South Parks Road, Oxford.) Dr. F. R. G. Heaf, Dr. Donald Stewart, Mr. P. Goldberg: The Tuberculous in Industry.
5.15 P.M. Dr. William H. Feldman: Streptomycin in Experimental Tuberculosis.

Friday, 19th

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION
10 A.M. Annual meeting, continued. Miss Nora Milnes, Prof. L. S. Penrose, Prof. F. A. E. Crew, F.R.S., Dr. A. S. Paterson: Social Aspects of Psychiatry.

BIOCHEMICAL SOCIETY
10.30 A.M. (Department of Biochemistry, University New Buildings, Teviot Place, Edinburgh.) Papers will be read.

TUBERCULOSIS ASSOCIATION
10 A.M. Oxford meeting, continued. Dr. H. J. Ustvedt, Dr. S. Roodhouse Gloyne: Relationship between Primary and Adult Pulmonary Tuberculosis.
2.15 P.M. Dr. Sheila Callender, Dr. A. Q. Wells, Dr. F. H. Kemp, Prof. Ida Mann, Dr. A. Robb-Smith: Sarcoidosis.

Saturday, 20th

TUBERCULOSIS ASSOCIATION
9.30 A.M. Oxford meeting, continued. Dr. André Bernou, Dr. Carl Semb: Treatment of Tension Cavities.

Births, Marriages, and Deaths

BIRTHS

CONCANON.—On July 7, in London, the wife of Dr. Austin Concanon—a son.

EVANS.—On July 1, in London, the wife of Dr. W. G. Evans—a daughter.

GAIRDNER.—On July 6, at Newcastle, the wife of Dr. Douglas Gairdner—a daughter.

HORGAN.—On June 30, in Tralee, Eire, the wife of Mr. M. J. Horgan, F.R.C.S.—a daughter.

PYRAH.—On July 3, at Leeds, the wife of Mr. Leslie N. Pyrah, F.R.C.S.—a daughter.

SCOTT.—On June 29, at Elgin, the wife of Dr. G. I. Scott—a daughter.

SPALDING.—On June 30, in London, the wife of Mr. J. E. Spalding, F.R.C.S.—a daughter.

SUTTON.—On July 4, the wife of Major M. G. Sutton, R.A.M.C.—a son.

TURTLE.—On July 5, in London, the wife of Dr. Peter Turtle—a son.

VERE-HODGE.—On July 2, at Northwood, the wife of Wing-Commander N. Vere-Hodge, F.R.C.S.—a son.

VIRDEN.—On July 6, at Stoke Poges, the wife of Dr. C. J. Virden—a daughter.

WALTON.—On July 7, at Rickmansworth, the wife of Lieut.-Colonel H. C. M. Walton, R.A.M.C.—a son.

MARRIAGES

CLYNTON REED—ROY.—On July 2, in Glasgow, J. Clynton Reed, O.B.E., M.B., lieut.-colonel R.A.M.C., to Jean Neilson Roy.

EVANS—MCCALLUM.—On July 6, at Exeter, Dr. E. Offley Evans, of Digswell, Herts, to Janet McCallum, of Exeter.

HALL—LOCKHART.—On July 2, at Wilmslow, Cheshire, Robert George Hibberd Hall, M.R.C.S., major R.A.M.C., to Elizabeth Carol Lockhart.

TWEEDIE—BINTCLIFFE.—On June 15, at Loughborough, George C. Tweedie, F.R.C.S.E., major R.A.M.C., to Gladys Mary Bintcliffe, V.A.D., R.N.

WHELDON—DIXON.—On June 29, at Chester-le-Street, John Tulloh Wheldon, M.B., to Elizabeth Jean Dixon.

DEATHS

CROFTS.—On July 7, A. Douglas Crofts, M.R.C.S., of Windsor.

NEVILLE.—On July 7, at Southminster, Essex, Thomas Crofts Neville, M.R.C.S.

SCHOFIELD.—On July 7, at Stockport, Francis William Schofield, M.B. Vict. and Lond., J.P.

WRIGHT.—On July 1, Thomas Strethill Wright, M.D. Oxfd, of Ganarew, Prestbury, Glos, aged 66.

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DES MOINES, IOWA

EFFECTS OF SLOW STARVATION*

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I BEGAN the present investigation as a prisoner-of-war, because I was repeatedly asked about the effects of protracted undernourishment. A thorough search of the standard works on medicine in most European languages revealed but scanty and contradictory accounts of the clinical condition associated with starvation, as would be expected from the diverse opinions expressed in the original papers (Budzynski and Chelchowski 1916, Falta 1917a and b, Hehir 1922, Hülse 1917, Schittenhelm and Schlect 1918, Weech 1936); and, though some research had been made into the effects on the blood and tissues, the results on general health and susceptibility to disease were barely mentioned.

The object of the investigation, therefore, was to discover the effects of long-continued underfeeding bordering on chronic starvation under controlled conditions of work and living, the only variables being the amount of food and the nationality of the subject. The investigation was planned in two parts: (1) A general survey of the effects of undernourishment on the manners, health, habits, and clinical condition of the patients; the early signs and symptoms of chronic starvation; and the diseases to which those suffering from this condition were especially susceptible. (2) The estimation of certain constituents of the blood in Russian prisoners suffering from moderate or severe undernourishment and presenting no other ascertainable disease. Englishmen living under similar conditions, except for the amount of food consumed, acted as controls.

LIVING CONDITIONS BEFORE AND DURING INVESTIGATION

Before admission to hospital all the patients were at work. The type of work was similar for both British and Russians. It consisted of hard manual labour of at least twelve hours a day for seven days a week, except that in every fourth week Sunday was kept as a day of rest. The work was done in stone quarries and coal mines, either underground or on the surface. To a small extent the Russians were also employed on farms, in forestry, and in saw-mills.

The accommodation was similar for both nationalities and generally consisted of wooden huts, somewhat overcrowded. Washing facilities were adequate and few patients were found to be really dirty. The British were better clad than the Russians, but both were sufficiently protected against the cold. In the hospital the food supplied by the German authorities to the two nationalities was identical. Before admission there were minor differences in type but little if any in food value. Table I shows the ration scale and nutritional value of the food per week as ordered by the German Wehrmacht. Table II shows the average daily amounts of food actually issued. Table III shows the average weekly amounts of Red-Cross food with which the British could supplement their German rations.

The weights and calorie, mineral, and vitamin values in table I were supplied by the German authorities. The values in table II are calculated from table I. The figures in table III are calculated from the known contents of the Red-Cross parcels and the food tables in Hawke and Bergeim's *Practical Physiological Chemistry* (1938).

The weight of the food supplied in the German rations was usually moderately correct, but much of the food was bad, and all was weighed uncleaned. Thus the actual amount received by each person was probably reduced by as much as a fifth. The meat was invariably weighed with bone included and was from parts with a high percentage of bone. The bread came direct from the bakery and contained much water. In the spring and early summer a large part of the potato ration was frost-bitten and inedible. As is usual where there is a shortage of food, the available supplies were all put into one container and converted into stew. The potatoes were boiled in their skins, together with the meat and dried vegetables, a minimum of salt being added. Twice a day (at 12 noon and 6 P.M.) the Russian patients received one litre of the stew, the quantity being made up by adding water to it. The stew was full of small particles of grit and often contained large stones. Generally it was exceedingly unpalatable. Besides these two meals, each man received a cup of "coffee" (150 c.cm.) and his bread and fat ration each day. This was the entire diet of the Russian patients, Russian doctors, and Russian staff of the hospital. The British received the same rations; but they could supplement their rations, and their food was cleaned, much better cooked, and contained no grit. Three or four meals a day were generally available.

The tables show that the Russians were getting theoretically about 1600 calories a day, with rather less than 60 g. of protein, nine-tenths of which was of vege-

TABLE I—SCALE OF WEEKLY RATIONS LAID DOWN FOR PRISONERS-OF-WAR IN OCTOBER, 1944

Foodstuff	Amount (g.)	Protein (g.)	Fat (g.)	Carbohydrate (g.)	Calories
Dried peas ..	138	28	1	85	461
Dried veg. ..	1400	50	4	168	908
Fresh veg. ..	350	4	0	21	100
Bread	2170	217	9	976	4853
Barley	138	15	6	91	478
Millet	138	15	6	91	478
Crushed grain ..	220	26	18	154	882
Rye flour ..	70	5	1	57	257
Potatoes	2800	64	0	537	2404
Fat	210	0	178	0	1602
Meat	250	39	34	0	462
Cheese	18	6	3	0	51
Sugar	175	0	0	170	680
Jam	175	0	0	90	360
Tea, coffee, &c. ..	14	0	0	0	0
Weekly total ..	8266	469	260	2440	13,976
Amount per day..	1181	67	37	349	1997

MINERALS

Foodstuff	Calcium (g.)	Phosphorus (g.)	Iron (mg.)
Vegetables ..	0·8	1·0	20
Bread	2·0	8·0	50
Cereals	1·0	1·0	8
Potatoes ..	..	..	30
Meat	0·1	0·4	..
Cheese	0·2	0·1	..
Weekly total ..	4·1	10·5	108
Amount per day	0·58	1·5	15·5

VITAMINS

Foodstuff	Vitamin A (I.U.)	Thiamine (I.U.)	Riboflavine (mg.)	Nicotinamide (mg.)	Ascorbic acid (mg.)
Dried peas ..	1000	500	0·1	..	10
Dried veg. ..	14,000	..	1·4	100	30
Fresh veg. ..	4000	100	0·7	..	35
Bread	1000	2000	3·0	100	..
Cereals	..	300	0·5	20	..
Potatoes ..	1000	1000	1·4	28	280
Meat, cheese, fats		..	0·1	10	..
Weekly total ..	21,000	3900	7·2	258	355
Amount per day	3000	560	1·0	37	51

Vitamin D was not present in any item. Vitamin E was present in adequate amounts in bread and cereals.

* Based on a thesis for the M.D. of Cambridge University.

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table origin and mainly supplied in the bread. As Mitchell (1924) showed, probably only about 60% of this vegetable protein is utilisable in the human body. The fat-intake was low, being not more than 30 g. a day. The amounts of vitamin A and of vitamin-B complex were just above the bare minimum considered necessary to prevent the clinical manifestations of deficiency, and the vitamin-C intake was just above the level which gives rise to latent scurvy. Vitamin D was absent from the diet; but the mineral content was adequate (calcium 0·5 g., iron 16 mg., and phosphorus 1·4 g.).

TABLE II—DAILY RATIONS ACTUALLY ISSUED TO PRISONERS-OF-WAR

Foodstuff	Average weight before cooking (g.)	Protein (g.)	Fat (g.)	Carbohydrate (g.)	Calories
Bread ..	330	35	2	148	742
Potatoes ..	400	9	0	77	344
Vegetables ..	400	7	0	22	116
Fat	25	0	21	0	189
Sugar ..	25	0	0	20	80
Jam	25	0	0	13	52
Meal	15	1	0	7	32
Meat	25	5	4	0	56
Total ..	1245	55	27	287	1611

The British received these amounts and about an extra thousand calories a day from the Red-Cross food, which was in a highly concentrated form, supplying at least 30 g. of animal protein a day in the form of meat, cheese, fish, and milk, and 30–60 g. of fat in the form of butter or vitaminised margarine. The whole of the Red-Cross food was vitaminised, but the extent is not known. The combined rations provided small but appetising meals, which were usually well cooked. They were of sufficient quantity to appease the hunger of most of the British patients from one meal to the next.

GENERAL EFFECTS OF STARVATION

The following observations were made in camps in Libya, Italy, and Germany, but the majority were made and the others confirmed at the prisoner-of-war hospital at Tost, in Germany. This establishment was equipped with beds for 1000 Russians, 250 British, and 250 other nationalities, and also had an outpatient department caring for over 15,000 prisoners. Thus it gave ample clinical material for this investigation.

The reactions to the reduction of diet from that of a front-line soldier to that in table II can be divided into many stages. First, there was the loss of the natural feeling of well-being. A growing feeling of hunger followed and gradually increased in intensity until, after about three weeks, the whole thought of the prisoner-of-war was concentrated on his food. His chief concern was how long it was to the next meal, and by what means he could supplement the meagre rations. This insistent feeling of hunger remained even after years of a low diet. It appeared even to increase with time, with the result that the half-starved man would go to the greatest lengths of ingenuity and dishonesty to obtain small amounts of extra nourishment. Only when death was imminent did the desire for food slowly vanish and the grossly emaciated prisoner become resigned to his fate, of which he seemed to be aware some weeks before it happened.

The next notable abnormality was a progressive mental and physical lethargy. The desire for sleep would increase; the number of hours that an adult male would wish to remain in bed, partly dozing but for the most part in genuine deep sleep, steadily rose from the normal eight hours to sixteen or more out of the twenty-four. Finally the only way to rouse a man from his bed was by the mention of food. Shortly after this came rapid fatigue in mental and physical effort. The experienced card-player, for instance, would forget the cards that had been played. Part of this was certainly lack of power of concentration, but the major portion was a lack of memory for recent events, though the memory for distant ones was still normal. The young athlete trying to keep fit found that he could no longer run; even walking left him exhausted and faint. Loss of consciousness from this cause, however, was never observed. The ability to make and maintain even severe physical exertion, when life depended on it, was still present.

STAGE OF PROGRESSIVE ASTHENIA

At this stage, which differed by days or even weeks from case to case and depended partly on the size of the man, a big well-built man standing up to shortage of food less well than his smaller brother, the first definite pathological signs would appear, and the prisoner would report to the doctor with polyuria. Frequency of micturition was present both by day and by night, being sufficiently severe at times to interfere seriously with sleep. The quantity of urine passed in the twenty-four hours was increased, even reaching 4 litres a day, and the polyuria was only partly controlled by limitation of fluid intake. The composition of the urine was not abnormal, but the specific gravity was low, often about 1·005. The chloride content was also reduced, the average of twenty specimens being 0·6 g. of sodium chloride per 100 c.cm. Among a very large number of cases examined albumin was never found in the urine. On the other hand, Ehrlich's diazo reaction was often positive.

The polyuria was nearly always accompanied by a considerable loss of weight, at first rapid but becoming slower in the next two months as the polyuria subsided. The loss of weight over the first six months of underfeeding was sometimes as much as 20% of the body-weight; it was always more severe in large or fat men. Eventually some kind of equilibrium was reached, and the loss, though continuous, became very slow and was only evident when weights were compared at intervals of 1–6 months.

With this continuous loss of weight the men began to look very thin, all the subcutaneous fat being apparently used up before any gross decrease in the size of the muscles was observed. Even previously well-developed muscles decreased in size, though the men were engaged in manual labour which would normally have kept their muscles in a good state of development. The colour left the cheeks, and the conjunctivæ gradually became paler. Usually within a year the skin developed an ever-deepening lemon-yellow tinge, not unlike that seen in pernicious anæmia. This change is very characteristic of starvation.

TABLE III—WEEKLY RED-CROSS RATIONS SUPPLIED TO BRITISH PRISONERS ONLY

Foodstuff	Average amount (g.)	Protein (g.)	Fat (g.)	Carbohydrate (g.)	Calories
Meat	480	96	48	0	806
Butter	240	0	184	0	1696
Cheese	90	24	30	0	390
Bacon	90	9	54	0	540
Fish	240	40	0	0	160
Sugar	240	0	0	220	880
Milk powder ..	400	100	100	150	1900
Biscuits	360	36	30	252	1398
Chocolate ..	120	..	30	70	490
Jam	240	..	..	100	400
Dried fruits ..	90	4	..	72	283
Oatmeal	60	10	4	40	240
Weekly total ..	2650	319	480	904	9183
Amount per day ..	378	45·5	68·5	129·1	1312

Eventually the fully developed picture ensued and continued without change until either an improvement in the rations led to recovery, or an intercurrent infection (generally a rapidly advancing tuberculosis) to a speedy death. Only a few patients died of

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inanition due to lack of food without evidence of any other disease. The final stages of pure starvation were never seen among the British, who seldom progressed beyond the stage of polyuria before further rations were available which led to a rapid recovery. On the other hand, if chronic dysentery were present, and this was by no means rare, on an even moderately reduced diet all the signs of chronic starvation supervened and deaths were frequent.

FULLY DEVELOPED PICTURE OF STARVATION

Muscular action became progressively slower, and the reaction times (which could not be measured owing to lack of apparatus) increased. Patients in the X-ray room, when told in their own language to place their hands on their head, showed a long lag, as though the order had not been heard or would not be obeyed, but in the end, very slowly and one movement at a time, the arms would be raised and placed in the required position. The rate at which conversation was carried out was equally slow, very often minutes would pass before the answer to a question could be obtained. Frequently the question would be repeated when, after a long pause, the patient said he had heard it the first time. This exceedingly slow cerebration was always present in advanced cases of inanition.

The gait, instead of being smart and military, became a shuffle. The feet seemed to be pushed forward over the ground rather than lifted and placed down again. This was particularly obvious on rough ground, where the patients would stumble over the smallest obstruction. There was a perceptible pause between each step, as if it were too much of an effort for the man to lift his feet and move forward. The whole performance was very similar to a slow-motion picture, except that the feet slid forward instead of being lifted.

At work these men were particularly prone to accidents; for, though they could see that a fall of rock or of a branch of a tree was imminent, their actions were too slow to enable them to move out of danger.

At this stage all were completely apathetic and more or less resigned to a feeling of constant weakness, though they all said they would soon be fit if they could only get enough to eat. Their only thought was food. Sexual desire was reduced but seldom completely lost, and in a few cases it became all-absorbing, though the man was to all appearances in the last stages of inanition. The longing for books, games, and other recreational pleasures slowly vanished, but the desire for alcohol remained and that for tobacco was greatly increased. Many men would sell even their meagre rations for a small quantity of tobacco. Moral standards were completely in abeyance, for a man would steal his best friend's rations or sell his overcoat for food or tobacco. The whole attitude was strongly reminiscent of hungry animals waiting for food. Standards of cleanliness were far below normal, and any pride in personal appearance was entirely lost.

PHYSICAL EXAMINATION

Little was found on physical examination except extreme emaciation. The tongue was occasionally atrophic but seldom glazed. Sight was good, only the exceptional cases having even mild night-blindness. Hearing was normal or very acute. No thyrotoxicosis was seen, and only one case of purpura, in a man who came from a hæmophilic family but was not considered to be hæmophilic himself. A noteworthy abnormality was the lowered body temperature, an average of 100 cases at 4 P.M. being as low as 35·7° C (96·3° F).

Circulatory System.—The heart sounds were normal and often very clear and loud, no doubt because of the thinness of the chest wall. The average pulse-rate of 100 hospital patients after they had walked from the wards to the pathological laboratory (a distance of not less than thirty yards) was 47 per min., with extreme limits of 90 and 34. On exercise, which consisted of walking up and down stairs for a minute, the pulse-rate seldom rose above 80 per min., and it returned to its original level in under 5 min. The blood-pressure was also reduced, the average of 100 cases being 107/71 mm. Hg. The lowest recorded with no organic disease was 88/55 mm. Hg.

Respiratory System.—The chest movements were for the most part normal. The breath sounds were clear, and added sounds were unusual. A small percentage of patients with œdema of the feet and legs also had a small pleural effusion which cleared up with the other œdema under treatment. The respiration-rate was slow the average of 50 cases in the standing position being 10·6 per min.

Gastro-intestinal System.—The abdomen, except for the lack of muscles and fat, showed little change. "Pot belly" was not seen. The spleen and liver were not palpable. Free fluid in the abdomen was detected in only 5% of those with œdema. The gastric content showed all types of curves, from complete achlorhydria to gross hyperchlorhydria. There was, however, a tendency for the free acid to be slightly above the normal limits. An examination of 50 test-meals performed on these patients showed that in 29 cases the acid secretion was within the normal limits; 4 were completely achlorhydric; 6 had a moderate hypochlorhydria; and the remaining 11 showed various degrees of hyperchlorhydria. In 6 cases the free acid was as high as 100 c.cm. of N/10 acid %. Thus the reaction of the stomach to the slow starvation was not consistent and showed a variation such as might be found in a well-fed community, but with a greater tendency to abnormality and a slight deviation towards hyperchlorhydria.

Nervous System.—All the reflexes were sluggish, but complete absence of knee or ankle jerks was never observed. The eyes reacted normally to light and convergence. Sensation of touch and of temperature was normal.

Skin.—The skin was generally healthy, and ulcers of the legs, furuncles, &c., were not abnormally common. In almost all cases the skin was much yellower than normal, particularly the face. The colour persisted for months after all other symptoms had subsided, but it eventually faded, and the normal colour returned. Only two cases of pellagra, with its typical skin lesions, were seen.

PREVALENCE OF DISEASE

The incidence of acute disease—e.g., malaria and dysentery—in British and Russian patients was very similar. Chronic disease—e.g., nephritis, diabetes, carcinoma, and syphilis—was as rare as would be expected in the type of patient examined. A most remarkable difference was shown, however, in the incidence of pulmonary tuberculosis. Among the British the figure was similar to that at home, radiography of about 500 patients showing an incidence of lung lesions in about 1·2%. Among 2000 Russians radiography detected tubercuIous infiltration in 15%, and a further 4% had pleural effusions which were almost certainly tuberculous. Of the 2000 Russians examined, 184 had *Myc. tuberculosis* in the sputum, and this in a hospital that did not receive patients already diagnosed as tuberculous.

The types of this disease were somewhat different from those generally seen in England. The onset was more rapid, and the commonest type almost bronchopneumonic. Very seldom was chronic fibroid phthisis seen. The course was extraordinarily rapid, the patient often dying in less than six months after radiography had shown no sign of disease. The reaction to the infection was very poor. The pulse-rate remained within normal limits until shortly before death, and the classical evening temperature was only found in the most advanced

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cases. Clinical œdema was no commoner in the tuberculous than among the rest of the patients. Necropsy revealed that the final cause of death was not often generalised miliary tuberculosis, the disease being usually confined to the lungs, where large cavities and massive tissue breakdown were most typical. Tuberculous ulceration of the gut was occasionally present. Only one case of Addison's disease was seen, and this was found to be due to tuberculous infection of the suprarenal glands.

CHANGES IN THE BLOOD

The second part of the investigation was intended to be a complete chemical analysis of the blood of patients, both Russian and British, admitted to Tost Hospital among whom no infective or neoplastic focus could be found. Among the British these were obtained from the staff and patients admitted for minor injuries. The classes of Russian patients were similar and included those with, or who had had, progressive asthenia or œdema without any other demonstrable organic lesion. The figures of the British cases were taken as controls and as a base-line for the Russian figures.

Preliminary investigation showed that it would be impossible to examine all the important constituents of the blood in all cases; hence it was decided to estimate the blood-sugar, hæmoglobin, total plasma-proteins, and erythrocyte-sedimentation rate (E.S.R.). These estimations were done on 51 British and 153 Russian patients; 46 of the Russians had clinical œdema at the time of the investigation, and many others had had it in the past.

Technique.—The morning after the day on which X-ray screening of the chest had excluded the presence of pulmonary tuberculosis 5–10 c.cm. of blood was removed from one of the arm veins without the application of a tourniquet, to avoid stasis. The blood was placed at once in a tube containing about 2·5 mg. of potassium oxalate per c.cm. as an anticoagulant. The whole of the investigations were carried out on this blood, and were begun immediately after its withdrawal. The blood was taken from the patient before breakfast; thus all estimations are fasting values.

Methods.—Blood-sugar was estimated by the methods of Folin and Wu or of Maclean. Hæmoglobin was determined by the acid hæmatin method of Sahli; the instrument was calibrated for 16 g. of Hb per 100 c.cm. of blood to read 100%. The method of Greenberg was used for most of the estimations of plasma-protein. The E.S.R. was determined in Westergren tubes, readings being taken at the end of the first and second hours.

An examination of the 51 British patients showed that the level of the plasma-proteins was generally slightly lower than would be found in men of a well-nourished population. The average of the 51 cases was 6·5 g. per 100 c.cm., which is the lower limit of normal, but probably only 5 cases with the plasma-protein level below 6 g. per 100 c.cm. are really pathological. This constitutes but 10% of the whole series. The Hb readings vary between 115% and 80%, with an average of 96%. Thus this class of patient showed no serious anæmia. All the blood-sugar estimations except one were within the normal limits. The E.S.R. was seldom abnormal, exceeding 10 mm. at the end of the first hour in only 3 of the 51 cases. The average of 5–10 mm. is greatly raised by one case (62–92 mm.), and without this the mean would be 3·8/5·3 mm.

The Russian figures disclose a vast difference. In only 2% of the Russians was the plasma-protein level above 7 g. per 100 c.cm., against 28% of the British; 75% of the Russians had a plasma-protein level below 6 g. per 100 c.cm. against only 10% of the British. The average for the 153 Russians was 5·3 g. per 100 c.cm., with a range from 2·8 to 7·5 g. per 100 c.cm. The Hb ranged from 105% to 44%, with a mean of 82%. Thus the average Russian under investigation had some degree of anæmia. The average of the blood-sugar estimations at 81 mg. per 100 c.cm. was lower than in the British but was within normal limits, and these figures showed much less variation than any of the other constituents, since all fell between 69 and 100 mg. per 100 c.cm. In 40 cases the blood-sugar level was between 70 and 80 mg. per 100 c.cm., indicating slight hypoglycæmia. The E.S.R. was in most cases extraordinarily high, only 15 patients (10%) showing a fall of less than 10 mm. in the first hour. Some very high readings were obtained (up to 140 mm. in the first hour), and the average of 40–65 mm. would never be found in a fit community. It was noteworthy that some of the cases with œdema had a normal E.S.R. Clinical œdema was present in 41 cases (26%); it developed in a few patients with a plasma-protein level of 5·3 g. per 100 c.cm. and in all patients with a level below 4·8 g. Table IV shows the average value of the three other constituents for groups of plasma-protein level among the Russians.

TABLE IV—BLOOD ANALYSES IN 153 RUSSIANS

Plasma-protein (g. per 100 c.cm.)	No. of cases	Average Hb (%)	Blood-sugar (mg. per 100 c.cm.)	E.S.R.* (mm.)	Œdema
Above 7·0 ..	3 (2%)	95	90·0	25–51	Nil
6·5–6·9 ..	6 (4%)	93½	86·0	27–49	,,
6·0–6·4 ..	28 (19%)	88	85·0	28–51	,,
5·5–5·9 ..	33 (21%)	85	83·0	45–70	,,
5·0–5·4 ..	38 (25%)	82	82·0	44–64	13%
4·5–4·9 ..	24 (15%)	78	81·5	36–63	66%
4·0–4·4 ..	12 (8%)	82	81·0	46–79	100%
Below 4·0 ..	9 (6%)	69	79·0	79–106	100%

* Average in 1 hr. and 2 hr.

The only abnormality shown by the first three groups (above 7·0, 6·5–6·9, and 6·0–6·4 g. per 100 c.cm.) is in the E.S.R., which is raised in all three to about the same degree, 20–30 mm. in the first hour, and 40–60 mm. in the second hour. As the plasma-protein level decreases, the Hb and the blood-sugar level follow but can scarcely be considered pathologically low. These three groups constitute only 25% of all the cases.

In the groups with a plasma-protein level of 5·5–5·9 g. per 100 c.cm., which provided 21% of the cases, the Hb average had fallen to 85%, which must be considered pathological for the adult male. The blood-sugar level was still within normal limits, but the E.S.R. had increased to the extent of 45 and 70 mm.

The group with a plasma-protein level of 5·0–5·4 g. per 100 c.cm. showed a further decrease in the Hb and blood-sugar level, but no alteration in the E.S.R. It contains the first few cases of clinical œdema, in 13% of the group, constituting 25% of all cases.

The groups with plasma-protein levels of 4·5–4·9 and 4·0–4·4 g. per 100 c.cm. were similar to the preceding group, except that clinical œdema was present in 66% and 100% of the respective groups.

In the group with a plasma-protein level below 4 g. per 100 c.cm., which was only 6% of all cases, gross anæmia had developed, the average Hb had fallen to 69%, and even the blood-sugar level verged on mild hypoglycæmia at 79 mg. per 100 c.cm. The average E.S.R. was 79–106 mm., an astonishingly high level, even allowing for the anæmia.

SIGNIFICANCE OF BLOOD CHANGES

British Cases.—The changes in the blood of the British cases are so slight that it must be concluded that the diet was adequate in those factors from which the blood components are formed. This indeed would be expected, since the calorie value of the diet was 2759 a day, which would be considered sufficient for all except those engaged in the hardest labour. The figures demonstrate that the methods and instruments used could be trusted to give reliable readings, as shown by normal results in healthy patients.

The average *plasma-protein* level in the 51 British cases is slightly below that generally stated to be normal

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for a healthy man. Three cases in which it was considerably reduced may have been due to the large size of the patient or to the hard work which a few of the patients had had to undertake before admission. As would be expected from the levels, none of the cases showed clinical evidence of hypoproteinæmia.

The average E.S.R. was normal, as would be expected among healthy males. It is likely that in those few cases in which it was raised this was only transitory, as was found to be so in two of the patients.

The *hæmoglobin* level was the normal for the healthy male. The high level was no doubt in part due to the very adequate iron supply of the diet.

The *blood-sugar* level was in every case within the normal range, but was usually rather lower than would be expected in the average healthy adult male.

Russian Cases.—A very large percentage of the Russians showed considerable abnormality in all the constituents of the blood that were examined, and in no case was there no abnormality.

The great majority of the Russians had a blood deficient in *plasma-protein*. It would have been surprising if they had not, since the daily calorie intake of 1350 with less than 60 g. of protein (almost all vegetable) might on theoretical grounds be just sufficient for a man at rest in bed if the food was of good quality. It was certainly insufficient when the food was coarse and of the type in which, according to Mitchell (1924), as much as 50% of the protein may be lost in the fæces and the man was expected to perform a full day's work. The plasma-protein level usually had to be 20% below the lower limit of normal before clinical symptoms and signs began to appear.

Œdema, one of the first symptoms to bring the cases to a doctor, only began when the plasma-protein level fell below 5·3 g. per 100 c.cm., and did not become universal until the level was below 4·6 g. The diet was sufficient in vitamins, and none of the cases presented any evidence of renal disease or cardiac failure; so it must be concluded that the œdema was a direct result of undernourishment. The fluid, salt, and vitamin intake was the same for all, and œdema developed only in those cases in which the plasma-protein level was considerably reduced. It therefore appears that a reduction in the concentration of this constituent of the blood is an important factor, if not the only one, in causing the œdema of undernourishment.

This hypothesis is supported by the fact that in those cases in which extra protein was given, and the protein concentration of the blood thus increased, the œdema subsided. It recurred when the plasma-protein level was allowed to fall to 4·7 g. per 100 c.cm. This conclusion is the reverse of that drawn by Hülse (1917), who found that there was no relation between blood hydræmia and œdema. On the other hand, it agrees with the findings of Liu et al. (1931b) and Weech (1936). Hehir (1922) did not mention any cases of œdema in his report on starvation; this may have been due to the short period of privation suffered by his patients, but it seems to be more easily explained on the grounds that his men were fed almost exclusively on meat, which might be expected to keep the plasma-protein level abnormally high for people suffering from starvation.

The plasma-protein level (4·6–5·3 g. per 100 c.cm.) at which œdema began in the Tost cases was somewhat lower than the 5·0 to 5·2 g. per 100 c.cm. stated by Moore and Van Slyke (1930) to produce œdema in nephrosis and nephritis, but close to the level found by Liu et al. (1931b) in nutritional œdema. That a higher level of the plasma-proteins is necessary to prevent œdema in nephritis can be explained by the increased capillary permeability commonly present in renal disease. It seems probable that the sole cause of the œdema in the present series was a reduction in the osmotic pressure of the blood due to lack of the plasma-proteins, with a result that water diffuses from the blood into the tissues.

The theoretical level of the plasma-proteins (with normal albumin-globulin ratio) necessary to keep the osmotic pressure of the blood above that of the capillary pressure is generally given as 5·0 to 5·3 g. per 100 c.cm. The capillary pressure in subnutrition may be taken as reduced, since the blood-pressure and pulse-pressure in these cases are both low. Thus the filtration pressure is reduced, and a smaller osmotic pressure of the blood would maintain the normal equilibrium of the fluids in and outside the vessels. Also, considerable œdema is present before it is detectable clinically. The small discrepancy between the theoretical figures and those found in this investigation are thus explained.

It has been stated that œdema often develops in starvation without a reduction in the level of the plasma-proteins. This happened frequently among the patients at Tost, but in all those cases some other organic lesion besides starvation was present. Is it not likely that this explains the diverse opinions of the many conflicting reports on the relation of the plasma-proteins to œdema and starvation?

The raised E.S.R. was by far the most obvious abnormality discovered. In less than 5% of the cases was the fall within normal limits, and in most cases it was grossly raised. The increase in the E.S.R. is probably the first sign that the body is not receiving sufficient nourishment; but the reason for the rapid fall of the red cells in undernourishment is obscure, and no reference has been made to it in previous publications outside Russia. It is well known that an increase in the rate of fall of the red corpuscles is usually associated with an exudative process. The actual rate of fall depends on many variables, but Gordon and Wardley (1943) showed that one of the chief factors was the ratio of the types of protein in the blood; fibrinogen, euglobulin, and crystalbumin increasing the rate of fall, while albumin, pseudoglobulin, and globoglycoid slowed it. The absorption of any body exudate is said to increase the fibrinogen content of the blood and thus give rise to a more rapid fall of the red cells. Bruckman et al. (1930) observe that there is some alteration in the albumin-globulin ratio in chronic starvation, and therefore it is likely that the early rise in the E.S.R. merely reflects a change in this ratio, which may even be too small to be recognised by routine methods of analysis. In starvation such a change probably indicates that the food intake is too small, and that there is an adverse nitrogen balance, with the body absorbing its own proteins. This seems to happen just as soon as the reserves of carbohydrate and fat are exhausted, even when the food contains sufficient protein to keep a positive nitrogen balance, if there were an adequate intake of other food to provide the necessary calories (Jansen 1917).

Clearly the change in the proteins is only one factor in causing the increase in the E.S.R. in starvation, for both the decrease in numbers of the red blood corpuscles and the general blood hydræmia would tend to produce a more rapid fall of the suspended cell, though not to the very high level recorded in the present cases. That the change in the constituents of the blood, rather than the actual level of the hæmoglobin and plasma-proteins, is the chief factor in raising the E.S.R. is clearly demonstrated, since five patients whose blood-proteins were reduced to 4·5 g. per 100 c.cm. and who had a considerable degree of anæmia (which should have increased the E.S.R.) had rates well within normal limits. This is in agreement with the findings of Aldred-Brown and Munro (1935).

All previous workers except Weech (1936) have emphasised that in chronic starvation the *hæmoglobin level* is invariably much reduced. In the present cases

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this reduction is less notable. Looking at it broadly, since hæmoglobin is a protein in combination with iron, and the diet of the Tost patients was adequate in its iron content, it might be expected that the level of the hæmoglobin and that of the plasma-protein would move down in step. This was so at Tost, though the rates varied. At the beginning the hæmoglobin was more affected than the plasma-proteins, but later the reverse was the case. This conforms with the general rule that the body maintains its essential elements at the expense of the less necessary tissues. The reason why previous workers found a much more severe fall of the hæmoglobin content of the blood may have been that the iron in the diet was much less than even the minimum received by the present cases.

The *blood-sugar* was by far the best maintained of all the constituents of the blood examined in these starvation cases. It is true that there is a progressive fall in the reducing substances as one passes from the better to the less well-nourished groups, but the difference in the average is less than 10%, and even the lowest reading recorded was but slightly below that sometimes found in a fasting but well-nourished person; at 69 mg. per 100 c.cm. it was well above the level which gives rise to serious hypoglycæmic symptoms. It must be remembered, however, that a percentage fall comparable to that of the plasma-proteins or of hæmoglobin would probably be incompatible with life. The slight decrease in the blood-sugar would explain the feeling of weakness and dizziness on exertion, and explain why consciousness was never lost even on long marches carried out by these men in very cold weather, since under these conditions the extra adrenaline secreted should mobilise the small reserves still available.

SIGNIFICANCE OF OTHER FINDINGS

The estimations of free and total *acidity of the gastric contents* after a test-meal show a much higher percentage of cases of normal or hypersecretion of acid, and fewer cases of achlorhydria than would be expected from previous reports. The cause of this is not clear, since all had been on a diet which is generally considered (if taken for a short period only) to reduce the acid secretion of the stomach. It may have been partly due to the lowered blood-sugar often present. The diet was, however, better in both quality and quantity than that of Hülse's (1917) patients. Also, all the patients had been so long on a poor diet that the stomach may have become accustomed to the different type of food with which it had to cope.

In common with all previous reports except that of Enright (1920) no albumin was found in the *urine*. The low specific gravity and chloride content were in part certainly due to the considerable quantity of fluid consumed and to the poor supply of salt. The underlying cause of the intermittent polyuria is difficult to understand. It cannot be attributed to a raised blood-pressure, for this was invariably low. The fluid intake was moderately constant and would not explain the periods of excessive excretion of urine. Since the output was erratic, it may be that a small change in the diet was sufficient to vary the blood-protein level from above to below the critical level for œdema and thus let latent œdema develop. A small increase in diet would then raise the level of the plasma-proteins again, and water would be reabsorbed from the tissues and excreted as urine. For this reason the patient's weight is a very unreliable method of estimating the degree of his undernourishment or his progress, since at least 10 lb. of excess fluid can be retained before there is any clinical sign of œdema. On the other hand, the polyuria may have been due to some change in the body metabolism, since Ehrlich diazo often reacted positively during polyuria. The nature of any such change was not revealed by the present investigation.

A reduction in the normal *body temperature* and decreased heat production have been observed by many investigators (Hehir 1922, Levy 1906, Zuntz and Loewy 1918) in cases of emaciation, but an almost equal number have reported a raised temperature (Enright 1920, Hülse 1917, Falta 1917a). Among the cases of starvation investigated at Tost the body temperature was well below normal, the average being 35·7° C (96·3° F) at 4 P.M., and patients with acute illness often had subnormal temperatures. This could not be attributed to the weather; for, though the temperature out of doors was at times below freezing-point, the hospital was well heated, and the temperature of the British contingent, living under the same conditions except for better food, was at the recognised normal level in health and in disease displayed the expected increase. Thus in assessing the temperature of a patient with starvation and intercurrent disease a lower base-line for normal should be accepted. At Tost this was 35·7° C (96·3° F), giving a temperature of 37° C (98·6° F) the same significance as one of 38·5° C (101·3° F) in a better-fed patient.

The published work is more generally in agreement about the reduction of the *heart-rate* than about the lowering of the body temperature, and only Enright (1920) insists that in all his cases the rate was increased. In the absence of intercurrent infection all the cases of starvation seen by me had a reduced heart-rate, and in the severely undernourished the average resting rate was 47 per min. The heart-rate was slowed during and after exercise. This upsets the explanation usually given for the slower rate—namely, that in starvation there is a lowered basal metabolic rate. It is suggested that under these conditions less oxygen is required by the tissues, with a proportionate reduction in the speed of the circulation. Plausible as this theory is, it no longer fully explains the facts, and it appears that the asthenia which definitely affects the skeletal muscles also affects the heart. The general decrease in irritability of the nervous system may also play its part in reducing the heart-rate.

SUBJECTIVE AND TEMPERAMENTAL EFFECTS

The sensation of persistent *hunger* is the body's answer to lack of sufficient nourishment. It is almost always present when too little food is being ingested, but it can generally be said to disappear after the first few days of complete fasting. Although not commented on in the early writings, the longing for food of the chronically undernourished people was clearly present. Whether the desire for food causes the secretion of the digestive juices, or the continued secretion of the juices without adequate food intake propagates the feeling of hunger, must at present remain a matter of speculation; but it is evident from the test-meals that the secretory power of the stomach is well maintained. It is certain that this persistent hunger, which is of a different intensity from that normally felt before meals, completely alters the character and outlook of the starving man and is perhaps the chief cause of his moral degeneration.

The changes in the *nervous system* were constant and uniform. The loss of memory, the confused and uncooperative state, the slowness of mental reactions, the lack of power of concentration, the rapid fatigue of the mind, the slowed movement, and the sluggish reflexes, can all be explained by a depression of the vital activity of the nerve-cell. Similar effects have been observed in severe anæmia (Wolff 1936) and among people exposed to a reduced oxygen tension at high altitudes. It has been proved that in these conditions the cause is poor oxygenation of the tissues (Leedham 1938). Though some of the effects of starvation on the nervous system can be explained in this way (the slower heart-rate would not improve matters), neither cyanosis nor dyspnœa is present in undernourishment. May it not be that the reduction in the plasma-protein level only

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indicates that all the body tissues are suffering from part of a general protein-starvation, and that this is the underlying cause of the depression of the nervous system? This depression cannot be explained by an abnormal blood-calcium level, since this is normal or reduced in starvation and not increased.

The effect of starvation on the *mental outlook* of the patient can roughly be assessed according to his outlook before starvation. His power of self-control and his conduct as a civilised being last just so long as he can maintain the veneer he has developed in society. None of the other hardships suffered by fighting men observed by me brought about such a rapid or complete degeneration of character as chronic starvation, and it seems that the silent areas of the brain which control the character suffer very early from deficient nutrition. Besides this it must be remembered that the instinct of self-preservation is one of the most powerful in animal life, and modern civilised man's existence is seldom threatened by lack of food; hence it is not surprising that the half-starved man will go to any lengths, even stealing from his friends, to obtain food when his life is endangered by starvation. Once the first barriers are broken down, deterioration proceeds rapidly, especially when he sees others behave like him.

RESISTANCE TO DISEASE

That the *liability to the common acute infections* did not seem to be increased is difficult to understand, but it may have been due to the reduction in the chances of infection from outside sources. If infection ensued, the rate of recovery was slower than normal, probably because the basal metabolism, and with it the antibody production, was less active than in well-nourished people.

The difference in the incidence of *tuberculosis* between the British and Russians is most interesting, for the only variable factor was the food. The living conditions, the work, the length of time that the men had suffered from the hard conditions, and even the chances of infection from outside were exactly similar for the British and the Russians, yet the Russians were extraordinarily susceptible to tuberculosis of the lung, whereas the British maintained about the same standards of immunity as are found in the British Isles. Seldom can the incidence of pulmonary tuberculosis have reached the figure of 20% of active disease in one section of a community while others living under precisely the same conditions (except for one factor) gave as low a figure as 1·5%. This appears to suggest very strongly that either a major factor in adult phthisis is one of nutrition, or that the British have acquired a much higher general immunity, and that exposure to infection plays only a small part.

Since the deaths from tuberculosis in Russia are given for the year 1927 as 142 per 100,000 living, which is half as much again as the figure for 1927 in Britain, and the incidence of tuberculosis among the Russians at Tost was 15 times that of the British, it must be presumed that the lack of food, and not poor natural immunity, was the main cause of the exceptionally high incidence of tuberculosis among the Russian prisoners-of-war. The very low fat-content of the diet, besides the general lack of food, may well have reduced the Russians' resistance to tuberculosis; but, whatever the cause, there is no doubt that some factor had so altered the reaction of their body to infection that, once this had taken place, its progress was more like that of an acute disease than a chronic granuloma. That this was not due to exceptional virulence of the infecting organism is proved by the normal course of the disease among the few British patients who contracted it.

PROGNOSIS

Most previous writers have stated that, even early in starvation, irreparable changes in body tissues take place, and complete recovery is impossible. Hehir (1922) even states that his cases reached a state in which death was inevitable some weeks before it took place. This was not my experience. Provided that no concomitant organic disease was present, the chance of recovery was excellent, even if only a slight increase of diet was possible. The general principle of supplying small meals often was impracticable, and the Russians ate all that was available at one meal, usually without any ill effects whatsoever. Irreversible changes noticed by previous workers may have been due to vitamin deficiency and not merely to undernourishment. This theory is partly confirmed by the complete recovery, both mental and physical, which took place in the Tost cases and certainly would have been impossible if they had shown advanced changes such as are found in beriberi and pellagra, both of which were present in previous reports of starvation.

CONCLUSIONS

By combining previous reports with my own investigation, it is possible to present a moderately clear picture of the effects of chronic starvation and to correlate the clinical condition with some of the changes in the blood. Thus the main clinical features of starvation are, in order of their appearance, loss of feeling of well-being, rapid physical and mental fatigue, increased desire for sleep, and loss of memory for recent events. The next stage produces clinical signs, of which the most important are bouts of polyuria, decreased pulse-rate, lowered blood-pressure, lowered basal metabolic rate, and reduction in temperature. Œdema as a direct result of lack of food is a late sign. The change in the mental outlook is part of the syndrome and develops concomitantly with the physical changes.

There are constant changes in the blood. The first of these is usually a raised E.S.R., which is soon followed by a moderate progressive anæmia and a reduction in the plasma-protein level. There is a definite relation between the plasma-protein level and clinical œdema. The critical level varies from case to case but always lies between 5·3 and 4·6 g. per 100 c.cm. and is generally 4·8 g. per 100 c.cm. The change in the white blood corpuscles is a leucopenia with a tendency to eosinophilia.

The liability to the acute infections is not greatly increased by chronic starvation, but the incidence of tuberculosis among the half-starved is many times that found in well-nourished people.

The recovery from chronic starvation in the absence of organic disease or vitamin deficiencies is excellent and complete, provided the patient is not moribund before further rations become available.

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REFERENCES

Aldred-Brown, G. R. P., Munro, J. M. H. (1935) *Quart. J. Med.* **4**, 269.
Bruckman, F. S., D'Esopo, L. M., Peters, J. P. (1930) *J. clin. Invest.* **8**, 577.
Budzynski, B., Chelchowski, K. (1916) *J. trop. Med.* **19**, 141.
Enright, W. (1920) *Lancet*, i, 314.
Falta, W. (1917a) *Wien. klin. Wschr.* **30**, 1637.
— (1917b) *Münch. med. Wschr.* **64**, 1539.
Gordon, C. M., Wardley, J. R. (1943) *Biochem. J.* **37**, 393.
Hawke, P. B., Bergeim, O. (1938) Practical Physiological Chemistry, London.
Hehir, P. (1922) *Brit. med. J.* i, 865.
Hülse, W. (1917) *Münch. med. Wschr.* **64**, 921.
Jansen, W. H. (1917) *Disch. Arch. klin. Med.* **74**, 1.
Leedham, C. L. (1938) *J. Aviation Med.* **9**, 150.
Lovy, M. (1906) *Z. klin. Med.* **9**, 177.
Liu, S. H., Chu, H. I., Li, R. C., Fan, C. (1931a) *Proc. Soc. exp. Biol., N.Y.* **29**, 252.
— — Wang, S. H., Chung, H. L. (1931b) *Ibid*, **29**, 250.
Mitchell, H. H. (1924) *Physiol. Rev.* **4**, 424.
Moore, N. S., Van Slyke, D. D. (1930) *J. clin. Invest.* **8**, 337.
Schittenhelm, A., Schlect, H. (1918) *Berl. klin. Wschr.* **55**, 1138.
Weech, A. A. (1936) *Int. Clin.* **2**, 223.
Wolff, H. G. (1936) *Physiol. Rev.* **16**, 545.
Zuntz, N., Loewy, A. (1918) *Biochem. Z.* **90**, 244.

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TUBOCURARINE CHLORIDE AS AN ADJUNCT TO ANÆSTHESIA

REPORT ON 180 CASES

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CURARE, which has the property of paralysing skeletal muscle, is an extract of the bark of several species of plants used by the South American Indians as an arrow poison. Two preparations with a curare-like action are available commercially, and it is essential, if accidents are to be avoided, to distinguish between them. One is 'Intocostrin,' a purified extract obtained from the plant *Chondodendron tomentosum*, which grows mainly in the upper regions of the Amazon and the eastern slopes of the Ecuador plateau. It is physiologically standardised to contain 20 units or 20 mg. of "curare extract" per ml. The other preparation available, and used by us, is *d*-tubocurarine chloride (also known commercially as curarine chloride), which was first isolated by King in 1935. The dose of this is specified by weight. Each unit of intocostrin is stated to be equivalent to 0·15 mg. of *d*-tubocurarine chloride when assayed on rabbits (Council on Pharmacy and Chemistry 1945). The potency of these drugs, however, depends on the species used for testing, and in man it appears that 1 unit of intocostrin is equivalent in potency to 0·3 mg. of *d*-tubocurarine chloride. Intocostrin has been used since 1942 to produce muscular relaxation in abdominal surgery, and the dosage and technique have been worked out by American and Canadian investigators (Griffith 1944, Griffith and Johnson 1942, Cullen 1944). *D*-tubocurarine chloride, although known since 1935, has only recently been used as an adjunct to general anæsthesia (Gray and Halton 1946).

All drugs with a curare-like action paralyse skeletal muscles by blocking the nerve impulse at the myoneural junction, probably by preventing the effector substance in voluntary muscle from reacting to acetylcholine. The work of Gross and Cullen (1945) appears to confirm the view that they act anywhere in the nervous or muscular system where acetylcholine is the chemical mediator. They also block synaptic transmission between preganglionic and postganglionic fibres of the sympathetic nervous system. There is evidence that curare-like drugs block peripheral response to vagal stimulation (Mautner and Luisada 1941). Their effects are rapidly reversible owing to rapid elimination from the body, partly by destruction in the liver and partly by excretion unchanged by the kidneys. The urine of one of us, collected within a few hours of receiving a dose of 30 mg. of *d*-tubocurarine chloride, exerted a curare action on muscle. Choline esters, physostigmine, and 'Prostigmin' (neostigmine) antagonise the action of curare-like drugs. *D*-tubocurarine chloride has a pure curare action, and in the doses in which we have used it has no toxic side-effects on the heart and cardiovascular system like many of the other curare alkaloids or crude curare preparations, which are thus unfit for clinical use. These may depress cardiac muscle, lower blood-pressure, and produce bronchospasm and histamine-like reactions.

PRELIMINARY OBSERVATIONS

Before any extensive use was made of *d*-tubocurarine chloride as an adjunct to anæsthesia, the effect of the drug was observed on one of us (F. P.) to obtain information on dosage and the best method of administration.

A dose of 10 *mg. given intravenously* produced only partial loss of muscular power, a feeling of weakness, ptosis, strabismus, and diplopia; the subject was still able to flex and extend the limbs. Diplopia was produced by a dose as small as 1–2 mg. A striking difference was noted after the injection of 20 mg. intravenously. Strabismus, diplopia, ptosis, and a feeling of weakness developed in less than a minute, and within two minutes the muscles of the face and neck became paralysed. Paresis rapidly spread to the muscles of the larynx, limbs, abdomen, and intercostals, in that order. Speech was lost, but swallowing and coughing were not impaired with this dose. The subject had a mask-like facies and ptosis similar to that seen in myasthenia gravis. The rate and depth of respiration while the subject was breathing pure oxygen were not consciously affected, though spirometer readings showed reduction in the tidal air from 750 c.cm. per respiration in a control period to 500 c.cm., with no alteration in rate. There was a rise of blood-pressure from 130/80 mm. to 145/85 mm. Hg, and a rise in pulse-rate from 72 to 86 per min., but this may have been of emotional origin. Within fifteen minutes power started to return to the muscles in the reverse order to that in which paresis had developed. Muscle power was regained within twenty-five minutes, although ptosis, diplopia, vertigo, and slight ataxia due to the diplopia persisted for three or four hours.

A dose of 30 *mg. given intravenously* next produced, within two minutes, complete paralysis of the muscles of the face, neck, limbs, and abdomen, and the subject was unable to open the eyes, move, speak, cough, or swallow. Within three minutes the intercostals were paralysed, and breathing became rapid and shallow. Spirometer measurements (see accompanying figure) with the subject breathing pure oxygen then recorded 25 respirations per min. (control 11 per min.) and a tidal air of only 160 c.cm. (control 750 c.cm.). For the next two minutes respiration became more and more difficult, and the feelings of the subject can only be described as terrifying. To be conscious yet paralysed and unable to breathe is a very unpleasant experience. At the end of five minutes the respirations, or rather gasps, were 50 per min, and the tidal air only 115 c.cm., which, with the dead-space air in the body and the apparatus, was totally inadequate to maintain respiratory exchange. The resultant asphyxia was masked by the fact that the subject was breathing pure oxygen. Though there was no apparent anoxæmia, it is probable that carbon dioxide was accumulating rapidly. At this point the subject was just beginning to lose consciousness, and the larynx and pharynx were clogged with mucus. Artificial respiration was then applied by manual compression of the breathing bag and prostigmin 1·5 mg. injected intravenously. In this dose it was ineffective in antagonising the effect of 30 mg. of *d*-tubocurarine chloride. Seven minutes' artificial respiration was sufficient to restore respiration to normal. Muscular power returned in thirty to forty minutes; diplopia and ptosis persisted for just over four hours. Six hours later the subject felt perfectly normal. A tight feeling across the chest persisted for several days. During the test the blood-pressure rose from 130/80 mm. to 200/140 mm. Hg in five minutes, and the pulse-rate increased considerably. These effects were attributed largely to fear and asphyxia rather than to a direct effect of the *d*-tubocurarine chloride on the cardiovascular system, because the blood-pressure returned to normal in ten minutes. Electrocardiograms taken before the administration of the drug and three minutes and ten minutes after its administration showed no abnormality. No undesirable after-effects were observed.

No analgesic action was observed with a dose of 30 mg. of *d*-tubocurarine chloride. Strips of adhesive plaster torn from a hairy part of the body still produced con-

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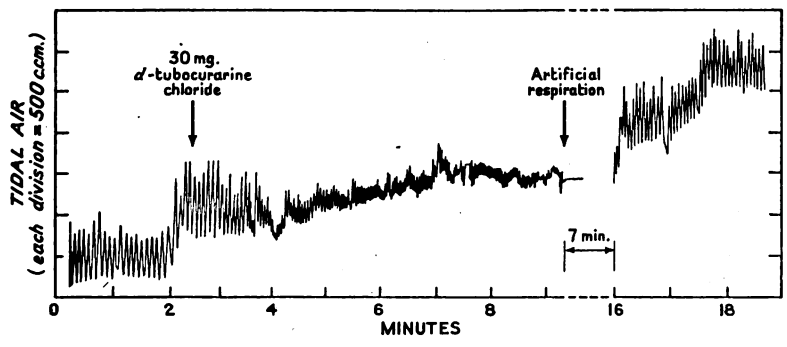
siderable pain. Whitacre and Fisher (1945) state that 10–13·5 c.cm. of intocostrin (equivalent to 200–270 mg. of standard "curare" and, on our reckoning, to 60–80 mg. of *d*-tubocurarine chloride) produces sudden unconsciousness and apnœa, and that, if artificial respiration is instituted, blood-pressure, pulse, and circulation are not appreciably affected, and the patient still remains unconscious. They further state that, using a total dose of 405 mg. of curare (equivalent to 135 mg. of *d*-tubocurarine chloride) they performed abdominal operations, using no other anæsthetic agent. We consider, however, that no conscious patient should receive a dose of 30 mg. or more of *d*-tubocurarine chloride, or a dose that depresses respiration excessively and abolishes swallowing or coughing. The effects are far too unpleasant.

Fractional Doses.—Further tests were then made on the conscious subject to determine the method of administration of the drug likely to give the most prolonged degree of relaxation. The administration of fractional doses was tried first. 30 mg. of *d*-tubocurarine chloride was dissolved in 15 c.cm. of sterile distilled water and injected intravenously at the rate of 1 mg. per min.—i.e., thirty minutes was taken over the injection. This simulated the administration of the drug in a saline drip transfusion. There was a slow and progressive paralysis, but this was never complete except for the face muscles. The speech was slurred, though never lost, and at all times the arms could be moved, and slight movements could be made with the neck and legs. The abdomen was never relaxed completely, and breathing was not consciously affected; the vital capacity was, however, reduced from a normal of 5·5–6 litres to 3·5 litres. Within ten minutes of receiving the drug the subject could sit up, and within fifteen minutes recovery of muscular power was complete, although diplopia, vertigo, and slight ataxia persisted for three hours. The degree of paralysis, after 30 mg. of *d*-tubocurarine chloride had been administered fractionally in half an hour, was probably about the same as that produced by 15 mg. given at once intravenously. Since the paralysis was progressive, 1 mg. of the drug per min. might have produced sufficient relaxation if given for a longer period of, say, forty-five minutes. This would mean increasing the dose to 45 mg. We therefore decided that, owing to rapid destruction and elimination, the administration of a given dose by a drip transfusion was not the best way of giving it. This was borne out by observations on patients undergoing operation. An initial curarising dose of 20 mg. or 2 mg. per stone of body-weight (0·3 mg. per kg.) given in one injection intravenously, followed by a drip delivering 1 mg. of *d*-tubocurarine chloride per min., would be effective over a long period; but, in view of the present expensiveness and scarcity of the drug, this would be uneconomic.

Combined Intravenous and Intramuscular Injections.—A dose of 15 mg. of *d*-tubocurarine was injected intravenously, and then a similar dose intramuscularly. The effects produced were similar to those obtained with 20 mg. given intravenously in a single injection, but they lasted much longer—i.e., forty-five minutes compared with twenty-five minutes after a single intravenous injection of 20 mg. At no time was respiration consciously impaired; the tidal air averaged about 500 c.cm., which was also the figure recorded after a single intravenous injection of 20 mg.

It was therefore decided that the best method of administering *d*-tubocurarine chloride during surgical operations was to begin with an adequate curarising dose intravenously and to reinforce this with a further quantity given intramuscularly if the operation was likely to last for more than from forty to forty-five minutes When supplemented by gas-and-oxygen anæsthesia the relaxing effect of an optimal dose of *d*-tubocurarine chloride is prolonged for approximately this period.



Effect of intravenous injection of *d*-tubocurarine chloride 30 mg. on respiration of unanæsthetised subject.

CLINICAL TRIALS

Clinical trials with *d*-tubocurarine chloride were undertaken (1) to determine the preliminary dose necessary to produce muscular relaxation sufficient for abdominal surgery, using 'Pentothal'-gas-oxygen second-plane anæsthesia; (2) to find what further amounts were needed to maintain relaxation for so long as the operation lasted; and (3) to compare patients who had had the drug with similar patients in whom relaxation had been obtained by other anæsthetic agents, and to observe any complications in using the drug either during operation or postoperatively. In all, 180 cases were observed. The operations in which *d*-tubocurarine chloride was used were as follows:

Abdominoperineal resection of rectum	1
Appendicectomy	14
Bronchoscopy and œsophagoscopy	13
Cholecystectomy and operations on biliary tract	23
Colon operations	11
Gastrectomy and operations on stomach	49
Gynæcological	30
Laparotomy	20
Prostatectomy	3
Ventral hernia	5
Miscellaneous	11
Total	180

DOSAGE AND TECHNIQUE

There appears to be an optimal dose of *d*-tubocurarine chloride. Less than this does not produce adequate abdominal relaxation, and very little more paralyses the diaphragm. This paralysis may be only partial, but it leads to depressed respiration and is, if possible, to be avoided. The limits are fine, especially in children, and they are influenced by the potency of the anæsthetic used.

The observations of Cullen (1943, 1944) were confirmed, and no more than one or two trials were made of *d*-tubocurarine chloride in combination with ether. Very small amounts of either are needed. The drawbacks of ether anæsthesia, however, remain: nausea, vomiting, depressed liver function, and prolonged postanæsthetic recovery. Several patients were anæsthetised with cyclopropane, but it became evident that a separate scale of dosage would probably be necessary for each anæsthetic; so it was decided to use pentothal-gas-oxygen, the anæsthetic combination least likely to upset the patient, using only the minimum of pentothal necessary to "stabilise" the anæsthesia. Methods in which anoxæmia is a part of the technique were not used. Pentothal is a potent respiratory depressant, and it is advisable to separate the injections of pentothal and *d*-tubocurarine chloride by

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at least ten minutes if respiratory depression is to be avoided; second doses of pentothal, sometimes necessary to deepen anæsthesia, lead to depression unless they are given very slowly. In two cases pentothal and *d*-tubocurarine chloride were administered in full dosage together. The result was respiratory depression needing artificial respiration for an hour in each case.

Premedication consisted of 'Omnopon' gr. $^1/_{30}$ (2·2 mg.) and scopolamine gr. $^1/_{1500}$ (0·044 mg.) per stone of body-weight. This allows for variations in body-weight, the 10-st. patient receiving omnopon gr. $^1/_3$ (22 mg.) and scopolamine gr. $^1/_{150}$ (0·44 mg.). All patients were intubated. Though we have never experienced bronchospasm or laryngospasm, which have been reported by earlier workers with curare, we felt that an endotracheal tube combined with a good fitting mask would give complete control of the respiration at all times. Patients for gastric section came to the theatre with a Ryle's tube in the stomach, so that the stomach could be sucked dry easily. This is of great practical value in preventing regurgitation of gastric contents through the paralysed cardia when the stomach is pressed on by the surgeon.

In all major cases an intravenous saline or plasma drip was set up. This enabled us to control any drop in blood-pressure and made the administration of further doses of pentothal or *d*-tubocurarine chloride easy to administer intravenously. In a gastrectomy, for example, an intravenous drip was set up before induction of anæsthesia, and pentothal (0·2–0·5 *g.*) was given by injecting it into the rubber tubing. Gas-and-oxygen was next administered, and blind intubation performed. The mask was adjusted so that it was gastight, and the patient was stabilised in second-plane anæsthesia, further small doses of pentothal being given if required. After anæsthesia had been proceeding smoothly and evenly for ten minutes, the calculated dose of *d*-tubocurarine chloride was injected into the tubing of the drip apparatus. This dose is best given all at once; attempts to gauge the dose by administering several small amounts at short intervals are not nearly so successful and lead to the patient's receiving much more of the drug than when it is administered in one dose.

An attempt was made to determine the dose necessary for abdominal surgery when the anæsthetic used was gas-and-oxygen with minimal doses of pentothal. In an average case we found that a dose of 2·5 mg. per stone of body-weight (0·4 mg. per kg.) given intravenously usually led to good relaxation without undue respiratory depression. In computing the weight it is, however, necessary to consider muscle mass and to discount that which is due solely to fat. In the very young, in the aged, and in cachectic and severely ill patients the dose was reduced to 2 mg. per stone of body-weight (0·3 mg. per kg.). The maximal single dose given to any patient was 30 mg.

Before receiving the *d*-tubocurarine chloride patients were stabilised in second-plane anæsthesia, and the breathing was consequently moderately deep. Less than a minute after the injection of the drug intravenously respiration became shallow and in some cases definitely depressed. It takes from three to five minutes for the drug to produce its maximal effect on the respiratory system, and the respiratory volume usually becomes progressively smaller up to this point. In a few cases, where either the depressant effect of pentothal still persisted or the dose of *d*-tubocurarine chloride was too great, respiration stopped altogether, and it was necessary to control the breathing by rhythmic manual compression of the bag in the anæsthetic circuit. This never gave any cause for alarm, as the respiratory depression is purely peripheral, not central, and only temporary.

In most cases the systolic blood-pressure rose about 10–15 mm. Hg shortly after injecting the drug. It was at first assumed that this was due to raised carbon-dioxide tension in the pulmonary alveoli, a direct consequence of the depressed respiration, but in several cases, in which the breathing was controlled and the patient hyperventilated from the beginning, this rise of blood-pressure still took place. This observation is contrary to the statements of most workers using intocostrin, who claim that the latter has no effect on blood-pressure.

The effect of the initial dose of *d*-tubocurarine chloride in relaxing the abdominal wall lasts about forty-five minutes and in some cases sixty minutes. In operations lasting longer than this we gave a second dose intramuscularly equal to half the original one. As an intramuscular injection usually takes about fifteen minutes to act, we gave this intramuscular injection half an hour after the original. The effect of these two injections lasts from one and a half to two hours and is thus adequate in all but the longest operations, but occasionally in those which last about three hours it is necessary to give a further dose to enable the surgeon to close the abdomen easily. Sufficiently good relaxation without respiratory depression may now be obtained by again halving the dose—i.e., a quarter of the initial dose—and this time it is given intravenously to produce a rapid effect.

Without being able to handle the abdominal wall it is not easy to judge the degree of relaxation or to determine when it is wearing off. We have not had the advantage of an electromyograph. An apparatus described by Henderson (1937) to measure intramuscular pressure was constructed but was not found of great practical use. We had therefore to depend on the surgeon or his assistant to tell us when the abdominal wall was regaining its tone. If the anæsthesia is allowed to lighten to too great a degree, the patient may move a limb or his head. In the earlier stages the abdomen usually remains relaxed, but later, perhaps half an hour after the initial dose, too light anæsthesia may be associated with tightening of the abdominal muscles. When the anæsthetic is deepened, the abdominal musculature again relaxes. To some extent the relaxing actions of curare-like drugs and anæsthetics are similar; additional anæsthetic may spare the drug, or a further dose of drug may enable one to use a weaker anæsthetic mixture. It has been shown by Gross and Cullen (1945) that both ether and pentothal have a curare-like action in the sense that they inhibit muscular contraction after the injection of acetylcholine.

SIGNS OF ANÆSTHESIA

The eye muscles are paralysed, and the respiration is often depressed—third-plane anæsthesia is in fact simulated in every respect—yet if the anæsthesia is allowed to lighten the patient may move. How then can one judge the depth of anæsthesia? Having anæsthetised and, so far as is practicable, stabilised the patient in the second plane, it is usually sufficient to keep him on the same gas mixture throughout. Gas-and-oxygen is a weak anæsthetic; hence deeper planes are not easily obtainable except in the anæmic or shocked patient. With normal patients, if sufficient oxygen is administered to keep the patient pink, deep anæsthesia is unlikely.

In those cases where satisfactory anæsthesia cannot, however, be maintained a further injection of pentothal becomes necessary. It must be given slowly and in minimal dose; otherwise severe depression of respiration will develop, and it will then become extremely difficult to judge the depth of anæsthesia.

With cyclopropane it is perhaps more difficult to judge the depth of anæsthesia, because deeper planes are so easily obtained. One must endeavour to carry on with the same percentage mixture as was originally found to have stabilised the patient in the first or early second plane.

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COMPLICATIONS

During Operation.—Apart from temporary depression of respiration, difficulties or complications during the operation were surprisingly few. For abdominal work sufficient *d*-tubocurarine must be given to paralyse completely the intercostal muscles. The dose is a critical one, and with adequate abdominal relaxation it appears that partial paralysis of the diaphragm is always present from ten to fifteen minutes initially; it soon wears off and, beyond slight lessening of the tidal air, is not of any consequence. In 34 of our cases respiration was helped by compression of the rebreathing bag from five to ten minutes. In another 18, however, respiratory depression was severe and necessitated controlled respiration for fifteen minutes or longer. Patients in the Trendelenburg position often showed pronounced respiratory depression after being given *d*-tubocurarine chloride. This was attributed to the weight of the liver and abdominal viscera pressing against the partially paralysed diaphragm. Case and Stiles (1946), in studies on unanæsthetised subjects, have shown that, so far as interference with vital capacity is concerned, the Trendelenburg position is one of the most unfavourable ones for the patient. Care must therefore be exercised when giving curare preparations to patients in this position. In all cases of respiratory depression it is important for the anæsthetist to practise controlled respiration until the patient is again breathing fully. Another occasional complication is jerky movements of the diaphragm similar to those which sometimes arise in third-plane ether anæsthesia; in a few cases this has led to a definite hiccough.

Prostigmin was seldom used to counteract the effect of excessive doses of *d*-tubocurarine chloride. In doses of 1–2 mg., recommended by American authorities, it had no apparent effect in restoring respiration that had been severely depressed. One of us administered 5 mg. of prostigmin intravenously to a patient who had received 43 mg. of *d*-tubocurarine in forty minutes during a thoracic operation under controlled respiration. Respiration was depressed for three-quarters of an hour after the operation was finished, but within five minutes of injecting the prostigmin respiration had returned to normal. It thus seems that, if prostigmin is to be effective, doses of the order of 5 mg. or more must be used. Atropine gr. $^1/_{50}$ (1·3 mg.) should also be given, to balance the parasympathomimetic action of the prostigmin.

There was often a slight rise in the systolic blood-pressure after administration of *d*-tubocurarine chloride, not usually more than 15–20 mm. Hg, and this may be the cause of a tendency to increased bleeding noted in 12% of the operations. We have, however, never been quite convinced of its reality. Unless used in doses to depress respiration severely, *d*-tubocurarine chloride has little effect on the pulse-rate.

The gut during operation is contracted, as with a spinal anæsthetic. It appears to be more irritable than normal, and peristalsis is easily produced. In the experimental animal *d*-tubocurarine chloride is, however, stated to cause relaxation of the gut (Gross and Cullen 1945).

It is remarkable that, though our patients were always very lightly anæsthetised, they appeared to suffer no shock whatever and often left the operating-theatre as fit after a three-hour abdominal operation as when they entered it. As a rule reflexes began to return before the patient left the table, and consciousness returned shortly after the patient reached the ward. This was appreciated by the nurses, whose bedside vigil, waiting for the patient to recover consciousness, was considerably shortened.

After Operation.—Postoperative complications have been surprisingly few in this series compared with those obtained by other anæsthetic techniques. Ileus developed in 4 of our cases, but it is impossible to say whether it was due to the drug. All the gastric patients had a Ryle's tube inserted; and, because of this, acute dilatation of the stomach was seldom seen. Chest complications were the most numerous, but they were no more frequent than with other anæsthetics; all the patients were operated on during the winter months. There have been 2 burst abdominal wounds which have required resuture. It was suggested that the failure to heal was due to hæmatomata caused by increased bleeding, but none of the patients concerned was noted to have bled unduly at the operation.

COMPARISON WITH OTHER ANÆSTHETIC TECHNIQUES

We have compared the results obtained with second-plane gas-and-oxygen anæsthesia, using *d*-tubocurarine chloride as a muscle relaxant, with those of other anæsthetic techniques. During the operation the relaxation obtained with *d*-tubocurarine chloride is just as good as that produced by spinal anæsthesia, only it does not last so long. Using our technique of repeated and carefully timed injections we have rarely had complaints from the surgeon that the patient was becoming "tight." Should this happen, a further injection produces relaxation in a minute or so. The drawbacks of spinal anæsthesia—fall of blood-pressure, contra-indication in shock, risk of infection and neurological sequelæ, postoperative headache, and the occasional difficulty of performing lumbar puncture—were never experienced. Of inhalation anæsthetics, gas alone does not produce satisfactory relaxation; ether produces relaxation but leads to prolonged postanæsthetic recovery, vomiting, and depression of liver function. When cyclopropane is used, complete muscular relaxation can only be produced by controlled respiration, and then bradycardia and arrhythmias may develop. Nerve blocks usually produce satisfactory relaxation, but are time-consuming. Protracted intravenous barbiturate anæsthesia is hazardous in poor-risk patients, depressing both respiration and liver function.

POSTOPERATIVE COMPLICATIONS

Anæsthetic	Vomiting	Headache	Respiratory	Hiccough	Burst wound	Retention of urine	Ileus and dilatation of stomach
	Per cent.						
D-tubocurarine chloride and gas-and-oxygen	6	1	20	1	1·2	0	3
Inhalation ..	33	3	23	0	0	5	3
Spinal	30	12	33	8	2	9	9

We have compared the postoperative complications after using *d*-tubocurarine chloride with those arising after 180 similar operations in which spinal anæsthesia was used, and after 180 operations done with inhalation anæsthetics (mainly gas-oxygen-ether or cyclopropane). The accompanying table shows that there was considerably less vomiting after light anæsthesia supplemented with *d*-tubocurarine chloride. The incidence of pulmonary complications was not significantly less than after general inhalation anæsthesia, but it was less than that after spinal anæsthesia. In comparison with spinal anæsthesia the relative absence of headache, retention of urine, and complications affecting the stomach and gut is also noteworthy. The total incidence of postoperative complications in the *d*-tubocurarine chloride series was certainly less than in the others.

SUMMARY

D-tubocurarine chloride has been used to procure muscular relaxation in abdominal operations.

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Preliminary observations were made on the unanæsthetised subject to find the safe dose and the most suitable method of administering the drug.

Perfect relaxation for abdominal operations was obtained by administering a dose of 2–2·5 mg. intravenously per stone of body-weight after the patient had been stabilised with pentothal and gas-and-oxygen in second-plane anæsthesia. The dose is a critical one and, if not carefully selected, may lead to respiratory depression.

This dose suffices for operations lasting from three-quarters of an hour to an hour. If relaxation is desired for more than this period, a second injection, half the first, is given intramuscularly half an hour after the first injection. The two injections produce relaxation lasting from one and a half to two hours; and, if relaxation is required for a period longer than this, further intravenous injections, a quarter the initial dose, can be given from time to time.

The chief complication experienced was respiratory depression or even arrest. Owing to the rapid elimination of the drug this effect was only temporary and was not considered serious. It was readily combated by controlled respiration.

Special care is needed when giving the drug to patients in the Trendelenburg position.

Apart from respiratory depression, complications and difficulties during operation were few. Postoperative complications were less than after spinal and general inhalation anæsthesia.

The chief advantages of *d*-tubocurarine chloride as an adjunct to anæsthesia are the ease of administration, the profound relaxation, the freedom from shock, the rapid postanæsthetic recovery, and the low incidence of postoperative complications.

We are indebted to the anæsthetic staffs of the Royal Free Hospital and Charing Cross Hospital for their help in the clinical part of this work.

REFERENCES

Case, E. H., Stiles, J. A. (1946) *Anesthesiology*, **7**, 29.
Council on Pharmacy and Chemistry (1945) *J. Amer. med. Ass.* **129**, 517.
Cullen, S. C. (1943) *Surgery*, **14**, 261.
— (1944) *Anesthesiology*, **5**, 166.
Gray, T. C., Halton, J. (1946) *Proc. R. Soc. Med.* **39**, 400.
Griffith, H. R. (1944) *Canad. med. Ass. J.* **50**, 144.
— (1945) *J. Amer. med. Ass.* **127**, 642.
— Johnson, G. E. (1942) *Anesthesiology*, **3**, 418.
Gross, E. G., Cullen, S. C. (1945) *Ibid*, **6**, 231.
Henderson, Y. (1937) *Anesth. & Analges.* **16**, 43.
King, H. (1935) *J. chem. Soc.* ii, 1381.
Mautner, H., Luisada, A. (1941) *J. Pharmacol.* **72**, 386.
Whitacre, R. J., Fisher, A. J. (1945) *Anesthesiology*, **6**, 124.

"MASKED" SYPHILIS

DANGERS OF PENICILLIN THERAPY

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THE increasing use of routine penicillin therapy is apt to mask early syphilis presenting in unusual forms. This real and important danger should be thoroughly appreciated by all, both general practitioners and specialists, undertaking penicillin therapy. It is of especial importance in the immediate post-war period.

Except organic arsenic, no other chemotherapeutic drug used before the introduction of penicillin in the treatment of non-specific diseases has either hindered the evolution or delayed the progress of syphilis presenting in the guise of some other condition. Organic arsenic is so little used in this country for general diseases that it has not created any difficulty. Penicillin in adequate dosage may cure syphilis, but in too small dosage may hasten its involution and hinder or prevent its later diagnosis.

ILLUSTRATIVE CASES

CASE 1.—A private was admitted to the medical division of a hospital with the diagnosis of tonsillitis. Temperature 101° F, pulse-rate 96. Right tonsil enlarged and purulent, with tender enlarged right tonsillar glands. Throat swab: no Klebs-Löffler bacilli; a few hæmolytic streptococci.

Treated with sulphathiazole for five days. Temperature 99·4° F. No improvement in throat condition. Intramuscular penicillin injections were then given. Condition worsened first day, with rise in temperature to 101·4° F, and increased swelling and tenderness in throat and neck; then improved on continuation of treatment.

A rash on the arms had been noted two days after admission to hospital (? sulphonamide rash). On examination a week later he had a well-defined maculopapular syphilide over the shoulders, sides of thorax, and limbs, and a papular eruption on the soles. The lesions showed signs of involution after 450,000 units of penicillin. The tonsillar inflammation had subsided, leaving a hard non-tender discrete gland in the right tonsillar region.

Patient said that he woke up, an hour before the third injection of penicillin (five hours after the start of this treatment), shaking and shivering, and with his throat and neck more painful and swollen. The shivering was followed by sweating, and the rash on his arms "stood out like fire." This was, in fact, a typical Herxheimer reaction of secondary syphilis, the rise in temperature twelve hours later to 101·4° F being the associated pyrexial reaction. Had the temperature been taken in the intervening twelve hours, it would have undoubtedly been higher.

His Kahn test was positive, + + + + (80 K.U.), and his rash resolved on routine penicillin therapy, all dark-field examinations being negative.

CASE 2.—A signaller reported sick with weeping areas on the scrotum and penis. He had had previous attacks of "seborrhœic dermatitis." Treated with calamine lotion, lotio d'Alibour, and then penicillin cream. After twelve days on this last treatment the condition had improved, but ulcers on the penis were found, and he was referred for further investigation and diagnosis.

On examination he had a large indurated circum-meatal ulcer of the penis, with several smaller ulcers on the scrotum, and bilateral inguinal adenitis, with discrete non-tender glands. Nothing else abnormal was found.

Eighteen dark-field examinations of the ulcers and five gland punctures in two weeks were negative. Three blood tests were also negative. A sixth gland puncture sixteen days after admission was positive for *Treponema pallida*, and the Kahn test on the same day was positive, + +.

On penicillin therapy he had a pyrexial Herxheimer reaction of 101·6° F, and all lesions healed rapidly.

CASE 3.—A corporal reported sick with eight weeks' history of a "boil" on the left cheek, which had been treated by fomentations and tablets while in England. An ulcer remained which did not heal until penicillin cream was applied, three weeks before he was referred for an opinion.

On examination he had a healed ulcer on the left angle of the jaw, with an indurated raised scar, and a hard discrete non-tender submental gland. In a good light a faint macular eruption of the trunk and limbs was visible.

A gland puncture was negative, but on dark-field examination of the edge of the ulcer, after scraping, two spirochætes resembling *T. pallida* but only slightly motile were seen. Blood test was positive, + + + +. On treatment he developed a macular flare in the rash and a pyrexial reaction of 101° F.

CASE 4.—A gunner had "balanitis and eczema of the scrotum" for ten days, for which he had received penicillin cream. On examination he had healing abrasions of the frenal angle, but no inguinal adenitis or other physical signs. Dark-field examinations negative. Repeated blood test positive, + + + +. A Herxheimer reaction developed when penicillin therapy was begun.

CASE 5.—A corporal with paronychia had had the nail of his left little finger incised. No healing took place on routine local treatment and sulphathiazole by mouth. After three weeks he was put on penicillin cream. The ulcer began to heal. Routine Kahn test six weeks after admission was positive, + +.

On examination he had a healing ulcer on the site of the paronychia, healing secondary papules on the scrotum, and a faint maculopapular rash on the trunk. Dark-field examinations of the ulcer on the finger were negative, but

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T. pallida was found in one of the scrotal lesions. Kahn test positive, +.

On penicillin therapy he developed a flare in his rash and a pyrexial reaction of 102° F.

CASE 6.—A gunner reported with three weeks' history of an ulcer of the lower lip, with swelling, first on the left side, and then on the right side of jaw. He was treated with mouth-washes and then with penicillin pastilles—about 60–80 in all—of unknown strength.

On examination he had a large ulcerated split papule at the left angle of the mouth and a mucous patch of the upper right alveolar margin, with discrete bilateral submental adenitis. Ten dark-field examinations of the ulcers were negative, but on the fourth gland puncture slightly motile spirochætes resembling *T. pallida* were seen. Kahn test repeated positive, ++++. A well-marked macular eruption of the skin, with an associated temperature of 100·8° F, developed when penicillin treatment was begun.

CASE 7.—A trooper had reported sick five weeks earlier with infection of the index finger of the right hand. After incision a slow-healing ulcer formed, which did not respond to sulphonamides and other measures. Penicillin injections were given. Patient noted a vivid rash on the body the first day of his injections but was told it was a "sensitivity" rash. A blood test taken was positive, ++.

On examination, after 570,000 units of penicillin, there was an involuting maculopapular eruption on the trunk and limbs, with papules on palms and soles, generalised adenopathy, and a large healing ulcer of the right index finger, with swelling and cyanosis extending up to the palm.

All dark-field examinations from ulcer, secondary lesions, and gland punctures were negative. Kahn test positive, ++++. Treatment was completed with penicillin. No further Herxheimer reaction was observed, the secondary rash involuted completely, and the ulcer of the finger healed rapidly.

DISCUSSION

The cases cited illustrate the difficulties in the diagnosis of syphilis caused by any form of penicillin medication. When syphilis presents in an unusual form, signs and symptoms which might enable a diagnosis to be made are easily overlooked by a doctor not specially trained in the subject. If, combined with this, it is realised that the "index of suspicion" for syphilis is still low among doctors, we may well face the prospect of cases of syphilis being missed in the early stages, with consequences that can easily be imagined.

The non-recognition of syphilis in very much larger numbers of civilians is to be expected, unless certain precautions are taken. It would be easy to require a dark-field examination of any lesion in a patient about to receive penicillin therapy, but this is impracticable and would be resented by both doctor and patient. The following points, however, would certainly minimise any danger of masking syphilis through penicillin medication:

(1) Unless the diagnosis is definite and certain, and possibly even then, a routine Kahn test should be done before treatment.

(2) If penicillin is to be given in any form the patient's entire body should be carefully examined. If any skin eruption exists the case should be seen by a dermatologist before being diagnosed as sulphonamide rash, toxic erythema, &c.

(3) When parenteral penicillin is given, a three-hourly temperature chart should be kept for the first twelve hours of administration. Any rise in temperature, aggravation of symptoms, or appearance or accentuation of a rash should arouse suspicion of a Herxheimer reaction and call for a careful review of the case. Since a Herxheimer reaction very often follows the penicillin treatment of syphilis, this is of definite value.

SUMMARY

Cases of syphilis not immediately recognised, and treated by penicillin medication, are described.

The difficulties in diagnosis thus created are discussed, and suggestions made which would tend to minimise them.

PRESERVATION OF THE VEIN IN OPERATIONS FOR ARTERIOVENOUS FISTULA

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THE danger of ischæmia in the distal part of a limb after ligature of its main artery is well recognised, but due warning against ligating a main vein has not been given, and the bad effects of such a ligature have not been emphasised. That bad effects may follow, particularly in the lower limb, is shown by the following representative cases out of a considerable number in which a similar clinical picture has been seen.

CASE 1 (*ligature of the profunda femoris artery and of the femoral and profunda veins*).—A guardsman was injured in the right groin by a fragment from a land mine. Five months later the signs of an arteriovenous fistula were found in his right femoral region. Ten months later still, in an operation to cure the fistula, the profunda femoris artery was ligated and a part of the femoral vein excised, including a piece of the tributary profunda vein (fig. 1).

There was much venous congestion in the affected limb after the operation, and ten months later the patient still had pain in the leg at the end of the day, and swelling of the ankle.

CASE 2 (*ligature of the popliteal vein*).—A private soldier, aged 29, was wounded by a rifle bullet behind the right knee. Six weeks later, at a convalescent depot, an arteriovenous lesion was found.

On examination soon after this he had the signs characteristic of an arteriovenous fistula in the right popliteal region, but there was no evidence of ischæmia or venous engorgement in the leg or foot. After lumbar ganglionectomy, however, dilated veins were noted in the leg on standing.

The fistula was cured by ligating the popliteal vein, excising about 1 in. of it, and tying the communication without damaging the artery (fig. 2). Pulses at the ankle were never lost.

When the patient got up after operation, the symptoms and signs of occlusion of the vein became obvious and were his only disability.

CASE 3 (*ligature of the femoral artery and vein*).—A lieutenant, aged 21, was wounded by a rifle bullet in the lower part of the right thigh. There was "spurting" bleeding for a short while, and the leg and foot soon began to go stiff and cold. Ten hours later the artery and vein were found to be damaged in the subsartorial canal, and they were both ligated. The leg soon became warmer and at the end of two weeks was painless. After five weeks the patient was allowed to get up and, on lowering his leg, he immediately noted his foot go purple, and it became very painful. The pain and the local physical signs were characteristic of venous obstruction.

Because he had a cold foot and an ischæmic nerve palsy, which was recovering very slowly, lumbar ganglionectomy was done; and, although the pulses soon returned at the ankle, the symptoms of venous obstruction were aggravated for about two weeks.

Further analysis shows that these symptoms and signs of venous obstruction are surprisingly constant, and they will now be described in full.

SYMPTOMS AND SIGNS OF VENOUS OBSTRUCTION IN THE LEG

The most marked symptom is pain, which is described as a "dull ache," "severe pins-and-needles," or a "bursting feeling." It is felt round the ankle or on the dorsum of the foot. It is produced by lowering the leg and is worse on standing than on simply putting the leg to the ground when in a sitting position. However, pain may become intolerable after sitting in one position for an hour or so. The pain is also brought on by heat of any sort; so it may come on in bed at night, and be particularly severe and persistent after an evening hot bath. When it has been brought on by lowering the limb, the

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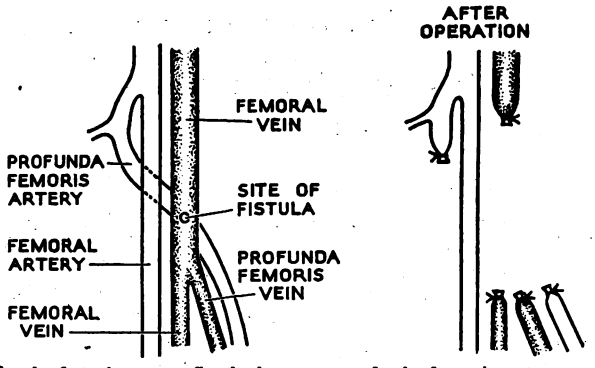

Fig. 1—Arteriovenous fistula between profunda femoris artery and femoral vein (case 1) treated by ligation of the artery and excision of a part of the femoral and profunda femoris veins. (Figs. 1-4 are diagrammatic and not drawn to scale.)

pain is rapidly relieved by raising it again above "heart level." When the pain is produced by heat, the relief on raising the limb is a much slower process but may be accelerated by cold applications. The pain is relieved by walking a few steps, and this differentiates it clearly from intermittent claudication. The onset of the pain is delayed and may be prevented by a firm bandage applied from the base of the toes to the lower thigh.

The onset of the pain can be delayed by pressure over the main artery or by the application of a blood-pressure cuff inflated sufficiently to occlude the artery. Similarly the pain can be brought on in the horizontal position by a cuff applied at a pressure a little lower than that required to stop the distal pulse.

Another symptom is swelling round the ankle. This comes on in all cases when the patient first gets out of bed and is worse with longer periods of standing. It can be greatly reduced by bandaging but may persist for a very long time—at least for many months after operation.

On examination the most striking features are the rapid onset of cyanosis on lowering the limb and the prominence of the surface veins round the ankle and over the dorsum of the foot. There will often be pitting œdema round the ankle, especially if the condition has not been recognised and treated.

EFFECT OF SYMPATHECTOMY

The fact that the superficial veins in a limb are dilated after sympathectomy has already been described by White and Smithwick,[1] who attribute this to increased blood-supply and to "release from the vasoconstrictor centre."

On several occasions we have noted that the symptoms of venous congestion have been exaggerated by sympathectomy, particularly so when the arterial supply is good compared with the venous return. This is illustrated by the following case, in which the lesion was similar to that in case 2, but the final disability was less.

CASE 4 (*ligature of popliteal artery and vein*).—A lance-corporal, aged 25, was wounded by a mortar-shell fragment behind the right knee. There was a lot of bleeding and gross swelling of the ankle and foot, which persisted three weeks. Thirteen days after wounding, a piece of metal was removed from the popliteal fossa and the wound was closed. Two months later the patient was walking without sticks, and a week after this he was doing full physical training, although he noticed some throbbing at the back of his knee and some pain on walking about a mile.

Nearly three months later, at a convalescent depot, a vascular lesion was noted. On examination soon after this there were the signs of an arteriovenous fistula in the right popliteal fossa, with an aneurysmal swelling on the lateral side also. There was no evidence of circulatory disorder in the foot. A lumbar ganglionectomy was done, which produced some venous dilatation.

When the lesion was explored seven months after wounding, it was not possible to preserve the artery because of the wide neck of the aneurysm sac, and so 1 in. of the artery and vein was excised (fig. 3). When the patient began to walk about again after the operation, the signs and symptoms characteristic of venous congestion were inconspicuous.

DISCUSSION

The recognition of these facts becomes of the greatest importance in the operative procedure for the treatment of arteriovenous fistulæ. Previously the vein has been sacrificed light-heartedly, and on good authority, as a step in the operation either of quadruple ligature or of obliteration of the fistula by ligature or suture of the hole in the artery, access being gained through the vein. It is now realised that this procedure is liable to produce considerable and lasting disability, particularly (paradoxically) when the greatest efforts have been made to preserve the main artery intact.

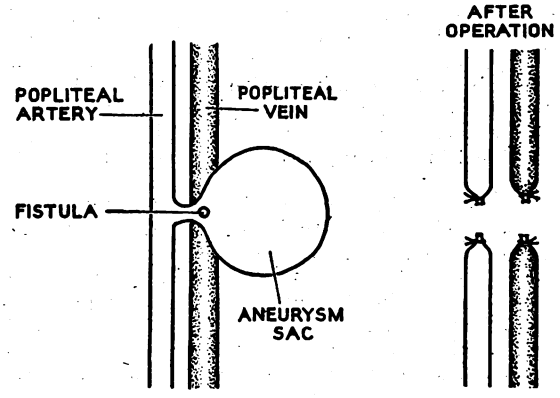

Fig. 3—Arteriovenous fistula between popliteal artery and popliteal vein with formation of aneurysm (case 4) treated by excision of about 1 in. of artery and vein.

An arteriovenous fistula produces so rich an arterial collateral circulation that the sacrifice of the artery at the site of the fistula is well tolerated. Strange though it may seem, in our experience quadruple ligation has been followed by less disability in the leg than has ligation of the vein with preservation of the artery. But the importance of tying the companion vein in *acute* arterial injury blinded us for long to the possibility of preserving the vein intact in long-standing cases, but making absolutely certain of dividing all the arteries communicating with it at the site of the fistula. This was tried in the following case which corresponds closely with case 1.

CASE 5 (*ligature of the profunda femoris artery with preservation of the femoral artery and the femoral and profunda veins*).—A major, aged 32, was wounded by a rifle bullet in the left

1. White, J. C., Smithwick, R. H. The Autonomic Nervous System, New York, 1941, p. 83.

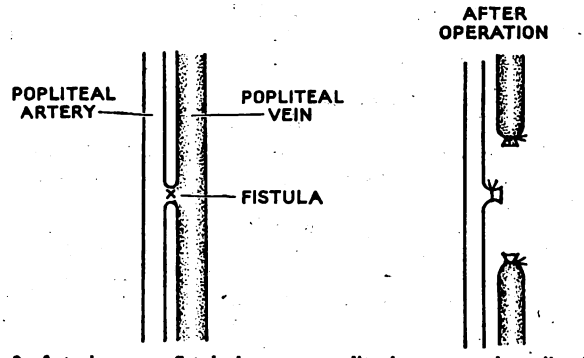

Fig. 2—Arteriovenous fistula between popliteal artery and popliteal vein (case 2) treated by excision of part of vein and ligation of communication.

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groin. There was some bleeding, which was controlled by a field dressing. He was helped back to a stretcher. The leg felt cold, and there was some numbness on the medial side but no paralysis. Three days later the exit wound in the buttock was excised and sutured. Thirteen days after wounding a vascular injury was found. He was soon allowed up and could walk without disability.

On examination four and a half months after injury he had the signs of an arteriovenous fistula in the left femoral triangle without vascular abnormality in the leg or foot. After lumbar ganglionectomy the veins in the limb became more obvious.

When explored, five months after wounding, the lesion was found to be a communication between the profunda femoris artery and the femoral vein proximal to the junction of the profunda vein. The femoral artery was found intact and preserved. The site of the fistula was determined as the point where local pressure over the vein completely stopped the thrill, and the veins were dissected towards this point. The profunda femoris artery was isolated above and below the

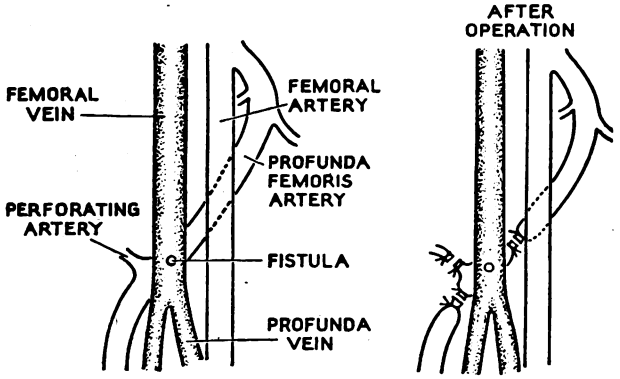

Fig. 4—Arteriovenous fistula between profunda femoris artery and femoral vein (case 5) treated by section and ligation of the artery above and below the fistula and of a perforating artery originating from the profunda femoris artery between these two points.

communication and then clamped, divided, and ligated at these two points. There was still feeble pulsation in the vein, and this was found to be coming by retrograde flow through a small perforating artery passing backwards through the adductor muscles. This was clamped, divided, and ligated (fig. 4). The absence of visible pulsation in the vein was now confirmed by palpation and auscultation, and the wound was closed.

The absence of dilated veins in the leg and foot while still in bed was in well-marked contrast with the previous cases. On getting up there was slight prominence of the veins compared with the other side but probably not more than was previously noted after ganglionectomy. There were no symptoms or signs of venous obstruction. Peripheral pulses were all present, and the nutrition of the leg was perfect.

This method of tying all the arteries as close to the communication as possible has also been used with advantage for a fistula between the superficial femoral artery and vein. The procedure is obviously of greatest value when more than one artery or vein is involved in a situation where a tourniquet cannot be used. In such circumstances it is very difficult to control blood-flow by temporary ligature to repair vessels by suture. It might be useful also where the fistula is very difficult to isolate for anatomical reasons.

The results in the few cases in which this method has been adopted seem to justify further trial in circumstances under which quadruple ligature would formerly have been considered the correct treatment.

SUMMARY

The effects of venous obstruction after operation for arteriovenous fistula in the leg are described.

The signs and symptoms are analysed, and the influence of sympathectomy on them is mentioned.

The importance of the patency of the artery involved is discussed; and it is suggested that ligature of the artery with preservation of the vein may be undertaken with safety and with advantage to the circulation in the limb.

I wish to express my gratitude to Prof. J. Paterson Ross for his criticism and advice in the preparation of this article, and to Sir Claude Frankau for permission to publish it.

OIL STERILISATION OF SYRINGES

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RECOGNITION of the possibility that infective hepatitis may be transmitted through non-sterile instruments used for injection has in recent years underlined the need for scrupulous sterilisation of syringes and needles, but this practice is still not universally observed. The use of all-glass syringes, advocated by the Medical Research Council committee, will need equipment which will be lacking for some time. In busy departments there is neither time nor apparatus to allow of even 10 minutes' boiling before each injection or venesection.

Sterilisation by hot oil, long advocated by Wright and Colebrook,[1] is a method which by its speed and efficacy merits wider adoption. Its efficiency is evident from the following tests.

(1) Broth cultures of *Staphylococcus aureus*, *Staph. pyogenes*, and *Bact. coli communis* were aspirated into syringes. The contaminated syringes were filled without pause 1–4 times with oil at 120°–140° C. Three fillings rendered the syringes sterile at all temperatures.

(2) An emulsion of a Lowenstein Jensen culture of *B. tuberculosis* was first aspirated into syringes. When oil at 120°–140° C was aspirated and expelled without pause the results were irregular. Sterilisation was achieved by 3–4 fillings of oil with a second's pause when the syringe was full. Guineapigs inoculated with subsequent washings from these syringes showed no evidence of tuberculosis when killed 2 months later. Control guineapigs developed generalised tuberculosis.

(3) Syringes which had contained oxalated blood infected with *Staph. aureus* and *Staph. pyogenes* were completely sterilised if, without previous washing, they were filled 1–4 times (with or without pause) with oil at 130° C.

(4) Blood containing *Staph. aureus* was dried on syringe barrels and pistons. These were completely sterilised by 2 minutes' immersion in oil at 120° C.

(5) Blood containing spores of *B. subtilis* was dried in syringes; exposures of up to 12 minutes in oil at 120° C failed to kill the spores.

SUGGESTED PROCEDURE

As soon as the syringe has been emptied of blood it should be rinsed in water. Thus no blood is left in the syringe, which is not allowed to dry. Used syringes are returned to the laboratory, where the needle is removed and the syringe filled 3–4 times, with perhaps a second's pause at each filling, with liquid paraffin at 130°–135° C. The needle is then replaced on the empty syringe, and the oil again sucked in and expelled. The sterile syringe is kept in a test-tube, where it is held in place by a folded strip of adhesive plaster. Samples of blood for all counting, chemical, and bacteriological work can be taken with these syringes.

DISCUSSION

The principal advantage of this method is its speed, and there is no risk of hæmolysis. Thermostatically controlled oil baths are marketed, but an improvised metal container serves well in ward or consulting-room. A thermometer registering up to 200° C should, for

1. Wright, A. E., Colebrook, L. Technique of the Teat and Capillary Glass Tube, London, 1921, p. 366.

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choice, be used, but in an emergency Wright's breadcrumb method may be employed. The heat of the oil should not exceed 150° C because beyond this temperature the cement holding the glass to the metal components of the syringe may melt. Sometimes, especially with larger syringes, the piston may jam after aspiration of the oil, owing to the glass cooling and contracting more rapidly than the metal plunger; but the piston moves freely again within 5 minutes.

Syringes submitted to this treatment are, of course, not sterile on the outside, and are therefore unsuitable for use in the operating-theatre, but they are satisfactory for ordinary injections or aspirations. Spores contained in dried blood are not killed by oil sterilisation, but with the technique described they are not likely to be encountered in ordinary injection or intravenous work. It remains to be determined whether the method will kill the virus of hepatitis.

I should like to thank Dr. E. T. C. Spooner for the Corstin strain of *Staph. aureus* and Dr. A. J. Messer for undertaking the guineapig inoculations. It should be emphasised that the technique described is not original, and has for many years been in use by others.

TUBERCULOUS GLANDS AND SINUSES
TREATED WITH CALCIFEROL

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THIS note is to record some interim observations on the treatment of tuberculous adenitis and sinuses from tuberculous abscesses with calciferol in high dosage. The treatment was tried because of the results obtained by Charpy [1] and Dowling et al.[2] in lupus vulgaris.

CASE 1.—A girl, aged 8 years, had an enlarged cervical gland about 1½ inches in diameter in the left side of her neck, first noted in November, 1945. A fortnight later a cold abscess appeared, which improved temporarily after aspiration. The fluid removed was macroscopically characteristic of tuberculous pus, and on culture tubercle bacilli were grown. The Mantoux reaction was negative in a dilution of 1/10,000 and positive in a dilution of 1/1000. There was no clinical or radiological evidence of tuberculosis elsewhere, and no relevant past or family history. The abscess cavity refilled some two or three weeks after aspiration and ruptured through the skin, leaving a discharging sinus. The skin round the sinus became excoriated, but there was no evidence of scrofuloderma.

Treatment with calciferol 50,000 units (one 'Ostelin High Potency' tablet) twice daily was begun at this stage, some six weeks after the enlarged gland had first been noted. Both the discharge from the sinus and the associated dermatitis settled within three weeks from the beginning of treatment. At the end of two months' treatment the enlarged gland had shrunk to about ½ inch in diameter, though it had become considerably harder. The blood-calcium at this time was 11·2 mg. per 100 c.cm. Treatment was discontinued for a month, at the end of which the gland had become slightly bigger, but the sinus had remained healed. Calciferol was again given in similar dosage for a further two months, and the gland again underwent involution.

No treatment has been given for some six weeks, and there has been no evidence of the gland enlarging or of the healed sinus breaking down. Treatment produced no constitutional upset.

CASE 2.—A girl, aged 17, had a cold abscess in the left side of the neck and an underlying tuberculous gland, first noted in September, 1945. The abscess was curetted at this time, but a small discharging sinus remained. Tubercle bacilli were grown from the pus. The Mantoux reaction was positive in a dilution of 1/10,000. There was no clinical or radiological evidence of tuberculosis elsewhere, and no relevant past or family history. In November, 1945, dermatitis developed round the opening of the sinus, together with one or two areas which were suspected of being scrofuloderma. Beyond rest, the only treatment that she had been receiving at this time was cod-liver oil and ultraviolet light. It was proposed to excise the underlying glandular mass, after the local dermatitis had settled.

At this stage treatment was begun with 50,000 units of calciferol twice daily. The discharge lessened almost immediately and ceased at the end of three weeks. The dermatitis settled some three weeks later, bland applications only having been applied. The areas that were thought to be scrofuloderma resolved after about two months' treatment, and at this time the underlying glandular mass had shrunk to half its original size. The blood-calcium after two months' treatment was 10·8 mg. per 100 c.cm. Treatment was continued at the same dosage for a further two months.

There was no constitutional upset as a result of treatment. For the past two months no treatment has been given, and there is no evidence of recurrence.

CASE 3.—A boy, aged 8 years, had an enlarged gland in the right side of the neck, first seen in January, 1946, when tuberculous adenitis was diagnosed. A Mantoux reaction was positive in a dilution of 1/10,000. There was no clinical or radiological evidence of tuberculosis elsewhere, and no relevant past or family history.

Treatment was begun with 50,000 units of calciferol twice daily. No other treatment was given. The gland began to involute about six weeks after the beginning of treatment, and involution was complete at the end of three months' treatment.

Some constitutional upset, in the form of lassitude and nausea, was experienced at the beginning of treatment, but this passed off after three or four weeks. Blood-calcium at the end of two months' treatment was 11·2 mg. per 100 c.cm. Treatment was discontinued for six weeks, but the gland has so far shown no enlargement.

CASE 4.—A boy, aged 17, had a cold abscess in the left side of the neck which had recurred several times within the past four years. Excision and curettage had given only temporary relief. He had also received cod-liver oil and ultraviolet light. There was an indefinite history of tuberculous peritonitis five years ago. In February, 1946, besides a discharging sinus in the line of the previous operation scar, an underlying gland about 1½ inches in diameter was palpable. When this gland was squeezed pus could be expressed from the sinus.

Treatment with calciferol 50,000 units twice daily was begun and has continued for the past four months, with no real improvement either in the discharging sinus or in the underlying gland. The blood-calcium at the end of two months' treatment was 10·3 mg. per 100 c.cm. The Mantoux reaction was positive in a dilution of 1/1000. There was no constitutional upset as a result of treatment.

CASE 5.—A soldier, aged 21, had a tuberculous abscess of the sternum for about four months, first noted in October, 1945. Tubercle bacilli had been cultured from the pus. There was no clinical or radiological evidence of tuberculosis elsewhere, and no relevant past or family history. The Mantoux reaction was positive in a dilution of 1/1000.

Treatment with calciferol 50,000 units twice daily was begun and continued for three months; it has been discontinued for the past month. The sinus healed after six weeks' treatment, and there has been no recurrence.

These observations suggest that calciferol in high dosage may be beneficial in the treatment of tuberculous conditions other than lupus vulgaris, for which it was originally used. None of these patients has been under observation long enough to justify a definite prognosis. It is clear, moreover, that not all cases of tuberculous adenitis are likely to respond to this treatment. It was thought possible that in case 4 the failure was due to inadequate drainage of pus, particularly in a patient who had a long-standing history of tuberculous adenitis and presumably a low resistance to the tubercle bacillus.

1. Charpy, M. J. *Ann. Derm. Syph., Paris*, 1943, 3, 331; 1944, 4, 110, 331.
2. Dowling, G. B., Thomas, E. W. P., Wallace, H. J. *Proc. R. Soc. Med.* 1946, 39, 225. Dowling, G. B., Thomas, E. W. P. *Lancet*, 1946, i, 919.

Dr. G. R. Osborn has been appointed honorary demonstrator in pathology at the University of Sheffield. Dr. Andrew Wilson has resigned from the lectureship in pharmacology, and Dr. J. H. Hale from the appointment of assistant bacteriologist.

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Medical Societies

FACULTY OF RADIOLOGISTS

AT the annual meeting held in Glasgow on June 28 and 29 a discussion on the

Sarcomas of Soft Tissues

was opened by Prof. C. F. W. ILLINGWORTH, who reported a series of cases treated at the Western Infirmary, Glasgow, over a considerable period. He included reticulosarcoma, lymphosarcoma, fibrosarcoma, myxosarcoma, myosarcoma, and other rare types. Except for the sarcomas of lymph-nodes, which are radiosensitive but dangerous because of the rapidity with which they grow and spread, the sarcomas are resistant to radiation and very difficult to treat by surgery. The few patients who survived for long periods had been treated by surgery and radiotherapy, but it was hard to be certain that the postoperative radiation made much difference.

Prof. R. A. WILLIS said that the sarcomas of soft parts are among the most difficult of the tumours about which pathologists are asked to give an opinion. Some of them are so undifferentiated that it is impossible even to decide whether they are sarcomas or carcinomas. This is understandable if the development of the connective tissues from the primitive mesenchyme is remembered. Many of the fully differentiated cells are capable of tumour formation, and these tumours are easily diagnosed and described; but there are also mesenchymal cells necessary for normal growth and repair which retain the power of differentiating into several different kinds of cell. It is therefore not surprising that tumours of connective tissue are found containing areas which appear on section to be entirely different and are described by a long string of names. Professor Willis thought that the name "mesenchymoma" should be used for these tumours. He illustrated his points by slides of sections in which a wrong diagnosis had been made, the true nature of the condition being apparent only post mortem.

Dr. WALDRON SMITHERS believed that some improvement in the results of radiotherapy of malignant tumours might be obtained by more careful study of time and intensity. Dr. C. J. L. THURGAR described an investigation undertaken at Newcastle to discover whether heat derived from short-wave diathermy is a useful adjunct to radiotherapy. Some benefit, he thought, had been obtained.

Nuclear Physics and Medical Research

Prof. P. I. DEE sketched the technical advances of the last ten years—the cyclotron, betatron, and linear accelerators which give X rays at powers as high as 100 million volts, and neutron beams, and may shortly allow tests to be made with an electron beam for therapy. The transmutation of elements is now, he said, a commonplace reaction, and radioactive isotopes of any element can be obtained. The uranium pile can produce very large quantities of such therapeutic agents as radioactive phosphorus and cobalt, so research is no longer limited by the small amounts previously obtainable from early experiments with alpha particles and the beam from the cyclotron.

Prof. A. S. MACFARLANE summarised the work done in the U.S.A. and Sweden using radioactive isotopes as tracers. Radioactive sodium chloride has been used to determine the rate of diffusion by the blood-stream and to measure the lymph volume of particular organs. Iron serves to determine unit volume of the blood and thus to investigate surgical shock. It has two isotopes with different properties which can be picked out by special measuring instruments, and this fact has been used to determine the relative survival in the blood-stream of stored and fresh blood. Also a mechanism has been demonstrated by which iron from hæmolysed blood is taken up by the new cells in preference to that supplied from without, even if given in large quantities. Hevesy, whose work in this field is already famous, has shown, working with the nucleated red cells of avian blood, that their survival-time is exactly 28 days, and he has also used radioactive phosphorus to investigate growth both of normal and of tumour cells. This kind of biochemistry may be described as dynamic, and shows to what an astonishing extent the chemical substances in all tissues are replaced during the life-span. In the space of ten years every molecule present in the living body of man will have been replaced by a new molecule synthesised within the framework of the living cells.

Dr. J. S. MITCHELL also spoke of the importance of tracer research, particularly in the investigation of new growth. In therapy the use of radioactive phosphorus to treat leukæmia is well established, but the results so far are very similar to those of ordinary irradiation of the spleen. For other conditions isotopes of calcium, strontium, and iodine have been tried, but improvement has been obtained only occasionally.

TUBERCULOSIS ASSOCIATION

AT a meeting in London on May 17, with Dr. NORMAN TATTERSALL, the president, in the chair, a paper on

Primary Pleurisy with Effusion

was read by Dr. BRIAN THOMPSON, who reported on 190 patients seen, between 1937 and 1944, in the urban industrial area served by the Ealing Chest Clinic. At the time of onset in each case evidence of parenchymal disease was either absent or limited to primary intrathoracic lesions. There was a high incidence of preceding or concurrent intrathoracic lesions typical of primary tuberculosis, sometimes confirmed by the later development of calcification. Cavity formation occurred in 5 patients with these lesions, which were not always on the same side as the effusion; but the incidence of both primary lesions and effusions was higher on the right.

Pleurisy with effusion was found predominantly in the years of late adolescence and young adult life. There was an excess of males over females in the 15–19 age-group.

The follow-up for the maximum periods of one to eight years revealed subsequent tuberculosis in 12% within the first year, in another 8% in the second year, and in a total of 25% within five years. In 15% of these patients the first evidence of disease was extrapulmonary. The death-rate for the 190 cases over the five-year period was 3·5%. Age was not related to the incidence of subsequent tuberculosis or its prognosis.

The condition was attributed by Dr. Thompson to infection of the pleural cavity from a subpleural focus or caseous glands, rather than to postprimary dissemination through the blood-stream. The former was supported by the absence of miliary lesions and by the tendency of both effusions and foci (when visible) to appear on the right side. A second effusion on the opposite side might be explained by lymph-node extension of infection across the mediastinum. Relatively few of the gross primary lesions underwent calcification.

There was a low incidence of known contact with tuberculosis, and the general picture was one of young persons escaping first infection in childhood, only to meet it suddenly, perhaps in a single massive dose, in the unaccustomed industrial or barrack life.

Pleurisy with effusion, he concluded, had probably become commoner under war-time conditions in England, reaching an incidence of one-tenth that of intrathoracic tuberculosis. In the absence of reinfectious disease or a non-tuberculous condition, the pleurisy was usually a manifestation of recent primary tuberculous infection. The condition occurred typically in young adults, who reacted differently to children; and the effusion was likely to follow first infection within six months. Phthisis, when it occurred, did so usually within the next year and almost always within two years. Though there was no evidence of any factor which influenced the march of events, it would be wise to continue the generally accepted lines of treatment, with careful radiological supervision for the five subsequent years.

Dr. W. R. RICHARDS said that, of pleural effusions in children at High Wood Hospital, 24% were at ages 6–9, 34% at 10–15. In younger children they were associated with serious complications. In adolescents, cases of effusion sometimes slipped quickly into phthisis.

Replying to further speakers Dr. THOMPSON said that the two cases with calcification observed by him had been quite young, and he did not agree that it took time for a primary infection to die out. He thought that patients in sanatoria were not liable to super-

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infection there. He defended the use of the terms "reinfection" and "phthisis."

Morbidity of Tuberculosis

Mr. W. T. RUSSELL, D.SC., recalled the uninterrupted decline in the standardised death-rates between 1851 and 1916. Mortality increased during the first world war, but with the exception of a few oscillations in influenzal years the curve was chiefly downwards until 1939. Though it was possible that tuberculosis might have its waves of increment and decrement, the decline in recent times might have three causes: a more tuberculised population owing to increased urbanisation; increase of resistance through environmental factors; and better diagnosis and treatment. In the age-group 15–25 the death-rate of females did not decline between 1913 and 1933. Stocks had suggested that the failure of this age-group mortality to decline between 1926 and 1935 might be due to these persons being children during world war I and having their resistance lowered. But mortality was not the right index of measurement. Morbidity figures would probably better relate events to the particular environment in which they had their inception.

Formal notifications numbered nearly 50,000 in 1931, 35,000 in 1939, and 43,000 in 1944, the war-time incidence affecting males much more than females. In the years 1940–44, 163,000 notifications were expected, but 202,500 actually occurred. Possibly the explanation lay partly in diagnosis on entry to the Forces and in mass radiography. During the three years, 1942–44, the increase of incidence over the 1936–38 rate was 12% in Wales but 25% in London, which first showed the changed direction of the curve in 1939–41. In Glasgow there was an increase of 48% for males and 65% for females (78% and 121% in age-group 0–15).

Dr. NORMAN ENGLAND said that up to now the only moderately accurate data in our possession had concerned fatalities; we knew next to nothing about morbidity and nothing even about the proportion of those primarily infected in each age-group who eventually developed disease. We must be able to measure the success or failure of our own attacks on the disease, and the statistical method was the only one which would guard us against inaccuracy. The requirements were (1) careful truthful records; (2) sure "national" statistics; (3) a campaign which, while based on proven experience, had a place for new methods; (4) the setting up of a central Bureau of Tuberculosis Statistics to organise and carry out inquiries.

The meeting resolved "that the council of the Tuberculosis Association should consider approaching the Joint Tuberculosis Council with a request that a Bureau of Statistics for Tuberculosis problems should be set up."

Reviews of Books

Rare Diseases and Some Debatable Subjects

F. PARKES WEBER, M.D., F.R.C.P. London: Staples Press. Pp. 174. 15s.

ACCOUNTS are here collected in one small volume of a number of the conditions which Dr. Parkes Weber has so often interpreted at medical meetings. His title is apt, for no-one is more knowledgable of rare diseases, or more able and willing to debate them with kindness and patience. "Disease," he writes on the first page, is often a "courtesy title" for a syndrome of unknown causation. Thus some fibrocystic diseases of bone are syndromes, whereas hyperparathyroidism is a disease, the cause of which—a parathyroid adenoma—is known. Rare diseases, few of which any doctor is likely to see unless he attends clinical societies, are not exceptions to nature's laws; they may be valuable guides which "prove"—that is, test—the rules and theories of commoner diseases, shedding light upon genetic or other antecedents.

Over thirty conditions or groups are included, omitting the blood diseases and some others. The Sturge-Kalischer-Weber disease (adopting Dr. K. Blum's nomenclature, modestly relegated by the author to a footnote) is one that, like several others, could hardly fail, if once seen, to be recognised; unfortunately the radiogram is not very clear. Various uncommon affections of the skin and subcutaneous tissues, including blushing and flushing, are described; and rheumatic nodules, thrombo-angiitis obliterans, Paget's bone disease, and some familial relations are well discussed. In a family subject to "renal" glycosuria, intercurrent illnesses had been ascribed to diabetes mellitus and one member had been treated with insulin. There is a chapter upon the agnosia of hemiplegia, especially that of cerebral blindness, the patient denying both the blindness and the paralysis; one man claimed that he could see everything, though he thought in broad daylight that it was night. The distinction from hysterical blindness is discussed.

Any doctor of experience who owns this valuable little book will say to himself, probably more than once, "I have seen this or that complaint but did not recognise it."

Acquisitions médicales récentes dans les pays alliés

A. ABAZA, ancien interne des hôpitaux de Paris. Paris: G. Doin. Pp. 706. Frs. 1000.

Dr. Abaza, who is deputy director of the epidemic control and medical intelligence branch of the health division in London of UNRRA, has summarised for his fellow-countrymen the advances in therapeutics in this country and in the United States since the fall of France in 1940. Penicillin, the sulphonamides, thiouracil, the newer insulins, the synthetic œstrogens, and a host of other subjects are reviewed, and in every case a very full bibliography is provided. This is international coöperation at its best, and we congratulate Dr. Abaza on his skill in presenting such a vast subject so cogently. Many Englishmen and Americans will also benefit from studying the book. Perhaps Dr. Abaza will consider providing English readers with a survey of the advances in medicine—such as the treatment of lupus with massive doses of vitamin D—made in France during the years of the occupation.

Pathology of Tropical Diseases

An Atlas. J. E. ASH, colonel, M.C., A.U.S., director, Army Institute of Pathology, Army Medical Museum; SOPHIE SPITZ, M.C., G.S., A.U.S., pathologist to the institute. London: W. B. Saunders. Pp. 350. 40s.

THIS well-balanced atlas sets forth the pathology of tropical and allied conditions, including the virus diseases, bartonellosis, the rickettsial diseases, the tropical treponematoses, and the spirochætal infections, and the commoner tropical bacterial diseases. The protozoal, ciliate, and other types of colonic disease are described in the section dealing with bacillary dysentery, and further chapters describe the pathology of the more important protozoal infections, malaria, leishmaniasis, and trypanosomiasis. There are good sections on the various fungal diseases, and the main nematode, trematode, and cestode infestations. A short chapter on the effects of heat is followed by sections dealing with the pathology of various deficiency diseases. The detailed pathology of each condition is clearly described, and the book is well illustrated by photographs, maps, and diagrams. A brief account of the epidemiology, diagnosis, and clinical features of each condition ensures that the pathology is integrated into the whole disease picture.

Pre-School Centres in Australia

(*The Lady Gowrie Child Centres.*) J. H. L. CUMPSTON, M.D., Commonwealth Director-General of Health; CHRISTINE M. HEINIG, M.B., Federal Education Officer, Australian Association for Pre-School Child Development. Canberra; Commonwealth Dept. of Health. Pp. 229.

LIKE the illustrated sales catalogues studied enviously in childhood, this is for us a record of the unattainable, for it describes a spacious and pleasant expansion of nursery schools. The first official nursery schools in Australia were built in war-time, but the book also describes a programme for building and equipping six pre-school centres in six capital cities. Staff and equipment in this country would never be forthcoming to run three separate nurseries for 2-year-old, 3-year-old, and 4-year-old children, but not all would advocate it. Perhaps less detail might have been given about space and equipment, which is bound to be affected by local conditions, and more about staffing and personnel, and the more general problems raised by the care of the children themselves. Nurseries, even as beautiful as these, do not survive in their bricks and mortar only.

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THE LANCET

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Future of Postgraduate Education

IN his Frederick Price lecture to the Royal College of Physicians of Edinburgh last week, Sir FRANCIS FRASER said that the aim must be to enable every doctor to be in constant touch with leaders and teachers of medicine. Hitherto, shortage both of replacements and of suitably qualified teachers has hindered postgraduate studies; but these difficulties should eventually be overcome. In the proposed National Health Service each region, "centred for professional guidance on a university and its medical school," will be composed of areas each of which will provide all the ordinary hospital and specialist services. The main hospital in each area will be staffed by specialists who could contribute largely to the further development of postgraduate teaching; they will be in contact both with the university and medical school of the region and with general practitioners and the staffs of the smaller hospitals. The professors and other teachers of the university departments should, in Sir FRANCIS FRASER'S opinion, be fully occupied in the basic education of undergraduates and in research, and should only exceptionally be diverted to postgraduate instruction; so it may well be advisable to adopt the practice, now being rapidly developed in London, of instituting chairs and departments expressly for advanced education in those branches of medicine and surgery that belong more especially to the postgraduate field. The universities' acceptance of responsibility for developing postgraduate education is welcome, since it makes sure that the instruction will be of university standard; in other words, it will be not simply technical and vocational but also rational and cultural, thus fostering both knowledge and judgment. "A national medical service," said Sir FRANCIS, "might easily produce a corps of time-servers. The maintenance of its standards is, therefore, a vital problem now for the medical profession, and the answer to the problem is largely an educational one and one for the medical schools to supply." In a letter to Monday's *Times* Lord MORAN likewise puts great emphasis on the part the universities should play through their influence on postgraduate teaching at hospitals working under the regional boards:

> "Each university must demand that every teacher in its region is recognised and approved by its medical faculty, just as all those who now teach in the twelve medical schools of London have to apply to the London University for recognition. In that fashion the faculty will ultimately be largely responsible for the quality of the staffs and in consequence for the efficiency of all sizable hospitals outside the special 'teaching group'."

Lord MORAN points warningly to the alternative, which he dreads—namely, that the undergraduate teaching hospitals will be a caste apart, while the hospitals under the regional board provide an inferior service and their staffs lose heart.

Turning to the training of the clinical specialist, Sir FRANCIS FRASER said it is generally agreed that at least five years' postgraduate instruction is needed for his education. The holding of a hospital appointment does not, of itself, suffice. The candidate's duties must be light enough to enable him to study his cases thoroughly; he should share his problems, in group discussions; he must have ready access to libraries, and he should be in touch with other clinical departments; part of his training period should be spent in the preclinical departments of a medical school or in a laboratory; he should be encouraged to undertake research and to show his aptitude for teaching; and above all he must be supervised. In short, the training of specialists can only be carried out in a well-provided university department; and a system of transfer from one unit to another and from one hospital to another should be devised.

The further education of general practitioners has hitherto been limited to intensive refresher courses, developed particularly in London, and to regular meetings for discussion, as practised at Newcastle-on-Tyne. Sir FRANCIS thinks that their needs could best be met by (1) clinical assistantships at nearby hospitals, (2) regular half-day sessions at the chief area hospital, (3) short courses, lasting one or two days, on recent progress in specific subjects, at the regional medical school or teaching hospital, and (4) intensive general refresher courses of a week or more, to be attended once a year at a centre remote from the place of practice. The intensive general refresher course lasting two or three weeks, and attended at intervals of several years, is not entirely satisfactory, either for the practitioner, who is liable to mental indigestion, or to the teacher, who is often conscious that the time given to preparing lectures is largely wasted. There is much truth in the suggestion that general practice is itself the most difficult of the specialties and that these courses rarely include discussion of the problems that most concern practitioners. To carry out the proposed programme, medical schools will have to enlist the help of many hospitals. It will be some years before it can be brought into full operation, but a beginning can be made now, and a postgraduate dean or director and a postgraduate committee should be appointed in each medical school or faculty. The unique facilities offered by London are to be developed by the British Postgraduate Medical Federation,[1] which has been established by the University of London to coördinate the many general and special hospitals, both voluntary and municipal. The aim is to develop for postgraduate students university departments in each of the major specialties. It was originally proposed that the component departments and institutes should be sited close to each other and to a central hospital or group of hospitals, and though this plan is at present impracticable an influential committee is now considering what parts of the centre should be completed first. Meanwhile a central office has already been opened, to marshal the scattered facilities. It will, among other functions, organise postgraduate studies for practitioners in the London area, and one of its most important duties will be to provide for the large numbers of graduates from overseas. It should become a channel for distribution to all parts of the United Kingdom.

This country, because of its geographical, economic, social, and political position, is suitable for the establishment of a great postgraduate medical organisation

1. See *Lancet*, 1946, i, 507, 693.

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to serve graduates from all parts; and there is a special duty to provide such an organisation to meet the needs of the Dominions and Colonies. It will take some years to build up departments staffed and equipped for research and education on university standards. In the meantime, all resources should be made accessible to doctors in this country and from overseas; and, Sir FRANCIS concluded, it is not too early for the wise and bold planning that is needed to establish Britain as a world centre of medical education through which may be moulded the thoughts and ideals of individuals, races, and nations.

Prevention and Palliation of Cancer

IN searching for the cause of cancer man seeks a source of power—the power to provoke continuous cell division. Measured against the power generated by the union of sperm and ovum this is a comparatively feeble one, but when set beside any other physiological or pathological impulse it is enormous. A recurring fashion tends to see this source of power as a negative quantity or quality. The idea finds favour from time to time that an original or inherent impulse for continuous division is repressed in normal tissues by their pressure effect, as perpetual motion is restrained by friction. Thirty-six years ago PEYTON ROUS first discovered a positive source of power in a filtrable transmissible agent residing within the dividing cell in a sarcoma of a Plymouth Rock chick. He advanced the theory that this agent was the cause of unlimited autonomous proliferation. In his lecture as Walker prizeman, reported on another page, Dr. ROUS reaffirmed his belief that filtrable agents or viruses are the only *known* cause of cancer, but he allowed that progress in knowledge cannot stand on biological precedent. Other sources of living power that now transcend our imagination may have to be found before the riddle is solved.

During the last few years there has been a vigorous flow of experiments and ideas across the Atlantic—with other good things—to refresh and inspire researchers over here. One fruit of all this work is a new view of cancer as a process made up of many links. The process may be set in motion at any time in postnatal life. The fœtus alone is guarded from it; the uterus, so far as cancer is concerned, is the only ivory tower man ever knows. No tumours appear to be truly inherited; there is merely a special liability in responsiveness—for example, of the skin to sunlight in xeroderma pigmentosum. By virtue of unnatural conditions, as in industrial life, some people are exposed to undue hazards. Peculiar, sometimes hereditary, responsiveness and intermittent hazards sum up during life to provide the right conditions for that irreversible cell change which may result in cancer. On the other hand, this change may be latent. This we know from the behaviour of the deadly blue-black mole provided it is undisturbed. Dr. ROUS quoted striking figures of prostatic cancer after the age of 40, obtained from autopsy material. These revealed an incidence of latent disease far above that seen in the clinic. Even when the irreversible change has occurred the young latent malignant tumour may require encouragement before it can grow. The complete process consists of two phases induced by two stimuli: initiators and promoters of autonomous growth. It is to the analysis of these factors that Dr. ROUS has contributed so greatly since 1941 by his study of skin tumours in the rabbit. In these, even after the occurrence of irreversible change has been revealed by the appearance of warts, the whole proliferation will subside so that its former site is undetectable even on microscopic scrutiny. Yet if the same carcinogenic stimulus is applied, or, more striking still, if a completely unrelated stimulus be applied, such as the irritation of turpentine or chloroform or the impulse of wound healing, warts will reappear in the places from which they had vanished.[1] Even growths already invasive may vanish if not continually encouraged by some stimulating agent.

These new observations teach an old lesson—that with cancer prevention is easier than cure. Prevention can be applied at two stages: absolute prevention before the change to a cancer cell can take place; and palliation that will sometimes succeed in denying that encouragement which the changed cells still need. Enough knowledge now exists to exploit both these fields. Both ought to be pursued, because they provide with early treatment the best hopes of controlling this disease. The analyses made by STEVENSON[2] and the KENNAWAYS[3] of the incidence of cancer at the more exposed sites in various income-groups point the way unmistakably towards prevention by education and by raising the conditions of life of the poorer groups. Palliation through hormone antagonisms is in its infancy. That the œstrogens hold many, though not all, prostatic growths in check encourages the hope that in time endocrinology will provide similar controls in other growths.

Nuclear Physics in Medicine

THE urgent needs of war have led to many striking advances in the treatment of disease for the benefit of all. Nuclear physics, however, became involved in a race for knowledge which helped to determine the result of the war, and the secrecy imposed to prevent escape of information about destructive processes has prevented proper discussion of its medical applications. Three papers read before the Faculty of Radiologists at the annual meeting in Glasgow give some idea of the research in progress and of the paths which may be taken. These run in three main directions but have numerous branches, many of which already converge and will later meet. First come the technical achievements—the betatron, the cyclotron, and linear electron accelerators. (The betatron already gives X-ray beams at 20 M ev, with at least one operating up to 100 M ev.) Next there is physiological research using radioactive isotope tracers. In the third place, because more tentative, we hear of experimental and clinical research on cancer. It is hoped that some of the new developments are sufficiently different from anything hitherto known, to promise an extension of radiotherapy to conditions in which little success has yet been attained. The X-ray beam from the betatron, which gives a higher dose in the tissues than on the skin through which it enters, is already important. It is only a matter of time before

1. MacKenzie, I., Rous, P. *J. exp. Med.* 1941, 73, 391.
2. Stevenson, T. H. C. *Biometrika*, 1923, 15, 382.
3. Kennaway, E. L., Kennaway, N. M. Unio Internationalis Contra Cancrum, 1937, vol. II no. 2, p. 101.

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a method is devised of controlling the electron stream so as to yield a true beta-ray beam, and examination of the properties of the beam may offer special advantages in treatment. The use of the neutron beam from the cyclotron for therapy has scarcely begun, although a good deal of work has been done in the United States. The peculiarities of the tissue absorption of this particulate radiation must be studied because it is possible that differential absorption could be produced.

The uranium pile itself is the great provider of radioactivity, and any element placed where the flux can reach it becomes artificially radioactive. Before long any radioactive isotope required is likely to be obtainable in the quantity desired. Physiological research already has to its credit many experiments with radioactive tracers which deserve to be described as elegant. Investigations of blood volume have been made, and also measurements of the survival-time of stored and fresh blood and of the life-span of avian red blood-cells. Metabolism of chemical substances in the body can be followed by tracer methods, and even reactions within the cells can be studied. It is easily seen that a new approach to physiology has been opened, and as soon as radioactive materials are to be had in this country in sufficient amounts—probably a matter of months—immediate advances may be made.

Cancer research will also use tracer methods. G. HEVESY, who has done much work with labelled phosphorus, has already gained information about the metabolism of the different nucleotides in normal and in tumour cells, and the effects of radiation thereon. For actual treatment a method has been worked out for calculating dosage from radioactive substances in terms of gramme-röntgens, and the differential absorption ratio of different organs can be examined. A last possibility of great interest is the substitution for radium of radioactive cobalt, from which a steady output of gamma radiation is obtained. This is undoubtedly practicable, and there are already hopes that a mass unit providing radiation of an intensity some five times greater than that of the radium beam units now available may be constructed.

Precepts for Success in Clinical Research

ONE time in 1944, before the American Society for Clinical Investigation, Dr. FULLER ALLBRIGHT read a presidential address[1] on Some of the "Do's" and "Do-not's" in Clinical Investigation. It was characteristically American. The language was crisp and semicolloquial. The personal modesty of style, that we have met in many American medical visitors to this country, appeared in the second paragraph where the writer confessed that the impulse to lay down principles for success is "a presumptive symptom of an oncoming intellectual menopause," and thought it "fortunate that no one follows them anyway." All American history was implicit in his refusal to define success: "I do not necessarily mean academic recognition; I do not necessarily mean self-satisfaction; I just mean success." No American needs telling what that is.

The precepts are both commonplace and shrewd. The young clinical investigator is told he must have good intellectual equipment, but if his brilliant imagination outruns his capacity for intellectual hard work it must be curbed. An inquisitive mind, however, is essential—a fondness for pondering the how's and the why's. Curiosity may serve quite well in place of the elusive quality called originality. The investigator should be ambitious, but not to the length of becoming jealous. He should not accept support, financial or otherwise, that ties him to a narrow field of inquiry, but must feel free to follow clues in any direction as his work develops. His choice of problem merits careful consideration; he should see it in perspective before focusing intensively upon it. Secretiveness is unhealthy; free discussion among workers about their work in progress is stimulating. It is good, wherever possible, to measure something and chart the results, but charts are not an end in themselves; they need to be thought about. The investigator should always have a working hypothesis, and always be willing to alter it if the facts so require. He should not postpone too long the working up of his data. He should not toil so hard at mere recording that he gives himself no time in the day to think.

Dr. ALLBRIGHT's advice is worth the attention not only of the young investigator but also of those who supervise his activities and shape his opportunities. Towards the end of it comes this brisk enjoinder: "See to it that you do not wake up some fine morning in an executive job. Do not show too much administrative ability. . . . Whatever else you do do not become a Professor of Medicine or the head of a department." Evidently Dr. ALLBRIGHT will not expect much increase of clinical investigation from the present mushrooming of English chairs of medicine on the Goodenough meadow. He recognises that, for most men, the full flowering of their investigative capacity is not possible when teaching, deskwork, committees, and hospital obligations take up most of their day. Promotion of research requires more than the appointment of even full-time general-duty professors. He suggests that successful investigators should receive associate professorships in clinical departments, giving them the maximum opportunity for research, but not entirely depriving them of the responsibility and stimulation of teaching and the care of patients. By inference he would not approve of pure research institutes for clinical subjects.

At the present stage of affairs on our side of the Atlantic, this problem in policy needs fuller discussion. Research cannot be forced, but the mental environment and the prospects offered to the investigator can do much to encourage it. For a department that is to produce an all-round high standard of clinical work, together with good teaching and a significant contribution of original work, there is probably an optimum size. How many members of staff should it aim at and how should their duties, status, and relations be arranged? What number of beds or patients should it be responsible for? Now is the time when answers to these questions should be sought, both by discussion and by experiment. Rapid changes are sweeping upon us, and it is important that organised efficiency of teaching and treatment should be accompanied by organised freedom and opportunity for investigation.

1. *J. clin. Invest.* 1944, 23, 921.

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Annotations

MENTAL HOSPITALS IN THE NEW SERVICE

AMONG benefits to be expected under the new National Health Service one is outstanding: the mental hospitals, instead of working in isolation as they have done in the past, are to become an integral part of the service. At its annual meeting last week the Mental Hospitals Association heard addresses on the new situation by Dr. Thomas Beaton, superintendent of St. James Hospital, Portsmouth, and Mr. R. H. Adcock, clerk of the Lancashire Mental Hospitals Board. Both believe there are great advantages and widening prospects in the new service, provided there is sufficient representation on the Central Health Services Council and the regional hospital boards. Dr. Beaton mentioned the benefit to the hospital of management, until now, by an experienced visiting committee appointed by the local authority, but Mr. Adcock feels that these committees have long been anachronistic, and that, by keeping mental health out of the main stream of local-authority affairs, they have delayed public acceptance of the value of psychological medicine. The development of psychiatric departments in general hospitals is already foreseen, but he suggested the possibility of a reverse process, mental hospitals set in rural communities becoming also the general hospitals of their area. Certainly such a widening of function would free mental hospitals of the stigma which now attaches to them, and would presumably make a great difference to the number of patients willing to seek voluntary treatment. During the war parts of many mental hospitals have been used for casualties, and it might therefore seem a good moment to extend their functions; but it must be borne in mind, as Dr. Beaton pointed out, that nearly all mental-hospital buildings are seriously out of date; moreover, mental-hospital accommodation is still below the country's needs. Dr. Beaton thought that no hospital should be built to last more than twenty years, and that simple light buildings, which can be extended and improved, are to be preferred to more solid structures which will become obsolete. He is disquieted by the divorce, in the Bill, of the hospital from the domiciliary services and hopes that "so far as it relates to mental health the new National Health Service will be comprehensively organised to deal with both hospital and home, so that the direction of treatment may be consistent throughout."

ADRENALECTOMY FOR PROSTATIC CANCER?

NOT long ago surgeons found that the distressing symptoms of prostatic cancer might be greatly relieved by castration; but the relief, though sometimes striking, is seldom permanent. What causes the temporary easement? We know that non-malignant prostatic tissue shrinks after castration, and it might be thought that shrinkage of normal tissue around the growth would reduce pressure on adjacent nerves and so abolish the pain. But it has been reported that the relief extends to pain caused by spinal metastases, which of course do not consist of healthy prostatic substance but of cancerous tissue. We may therefore be tempted to suspect that the growth even of metastases partly depends on androgen. Supposing this revolutionary suspicion to be correct, how can we account for the fact that removal of the testes gives only transient respite? There is still a plausible, though perhaps specious, reply. In the laboratory it has been found that the testes are not the only source of androgen; the adrenals also secrete this type of hormone, though of a kind and quantity that are relatively ineffective. After castration the adrenals enlarge, and their secretion of androgen is amplified. This increased androgen production by the adrenals might conceivably account for the recrudescence of an androgen-sensitive prostatic cancer some time after its growth had been checked by castration. If this thesis were correct our business might be to curtail the further supply of androgen from the adrenals by their removal, sustaining the patient afterwards by substitution therapy.

This hypothesis must be reviewed in the light of recent work by Huggins and Scott.[1] These pioneers removed the adrenals from four men with prostatic cancer, who had been relieved by castration, but 3–8 months later were again suffering severely. Two of the patients survived long enough (11 days and 116 days) for noteworthy results. In both, removal of the adrenals caused a sustained diminution of urinary 17-ketosteroids (androgens) to a low level—namely, 1·4 mg. and 1 mg. per litre—as compared with 8–12 mg. per litre before adrenalectomy. But autopsies revealed that, in spite of this decrease, malignant growth was still active in both instances.

We can only conclude, as the authors have done, that, despite the evidence in its favour, adrenalectomy is not a practical method of treating patients with prostatic cancer who have a recrudescence of the disease after temporary relief through castration. The question remains why castration mitigates the symptoms of prostatic cancer and why this mitigation is not permanent.

DISTRIBUTION OF BLOOD-GROUPS

DURING the war G. L. Taylor and his co-workers examined the blood-groups of 190,000 people, mostly in the R.A.F., who were drawn from all over the United Kingdom. They also examined some foreigners—Belgian, Czechoslovak, Dutch, French, Polish, and Turkish—though the numbers were small. The findings have now been published by Dobson and Ikin.[2] The distribution of blood-groups among the 190,000 R.A.F. men, which can be taken as representative of the distribution for the United Kingdom, was: group O 46·7%, group A 41·7%, group B 8·6%, and group AB 3·0%. The incidence of abnormalities was very small. Thus cold agglutinins were detected in 61 persons, and in 15 cases (3 of group O, and 12 of group A) there was a deficiency or complete absence of anti-B agglutinin; in only one case (group O) was anti-A agglutinin completely absent. These figures differ little from those already known, such as those recorded by the Hirzfelds[3] in 1919: group O 46·4%, group A 43·4%, group B 7·2%, and group AB 3·0%.

The findings in the small foreign samples are also in accordance with figures recorded by others, and show the characteristic fall in the frequencies of groups O and A and the rise in group B as one moves south and east across Europe; the Czechoslovaks clearly belong to the eastern European type. The variation of blood-group with race has been the subject of much research, summarised by Lattes.[4] The western Europeans correspond more or less to the figures now given by Dobson and Ikin. Of the inhabitants of southern Asia and Africa, 30–40% are in group O, and group B is more common than group A; the Indians and Chinese are mostly similar, but over 10% are in group AB. There is the curious "Hunan" group of Chinese with a distribution like that found by Dobson and Ikin in their Czechs—i.e., group O 28·4%, group A 46·2%, group B 15·7%, and group AB 9·7%. The American Indians, both north and south, are remarkable for being nearly all group O. Within these large averages, smaller variations occur from place to place, as Dobson and Ikin illustrate with small samples from Cambridge and London. Their figures will form a firm basis for the assessment of blood available for transfusion.

1. Huggins, C., Scott, W. W. *Ann. Surg.* 1945, 122, 1031.
2. Dobson, A. M., Ikin, E. W. *J. Path. Bact.* 1946, 58, 221.
3. Hirzfeld, L., Hirzfeld, H. *Lancet*, 1919, ii, 675.
4. Lattes, K. The Individuality of the Blood, Oxford, 1932.

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TREATMENT OF RINGWORM OF THE FEET

MOST of us take a personal interest in tinea pedis, for—like piles, toothache, and sore throats—if we manage to escape it ourselves it will not be long before some member of our family is clamouring for attention.

In America, Sulzberger and Kanof[1] have found that talc mixed with undecylenic acid (2%) and zinc undecylenate (20%) gives a reasonable degree of protection, and is much more satisfactory than powders containing boric and salicylic acids. This powder has a smell, and sometimes causes a burning sensation when applied, but these have not proved serious defects. Nickerson and others,[2] in an investigation among the U.S. Army Air Force Proving Ground Command, observed that if sandals were worn instead of shoes the incidence of infections of the feet was considerably diminished. In Britain, Gray[3] suggests that the toes and the webs between them should be washed daily, carefully dried, and then dusted with a powder containing 1% salicylic acid in talc or kaolin. He doubts the wisdom of the rule that bathers should paddle in solutions of sodium hypochlorite or sodium thiosulphite before entering and after leaving the bath, and advocates simple personal measures of prophylaxis for those who share bedrooms and bathrooms with others. It is clearly unwise to walk about in bathing places or bathrooms with bare feet; each person should have his own bath mat, and rubber shoes should be worn where possible in swimming-pools. It is important, particularly in these days of clothing coupons, to insist that uninfected people should not wear the socks and shoes of a person with ringworm of the feet. No certain method of sterilising these articles has yet been found; probably the best method is to place shoes and socks for 24 hours in a cabinet containing a saucer of pure formalin. Despite all such precautions the malady is hard to stamp out because many infected people are unaware of their condition.

In treating tinea of the feet it is often forgotten that the fungi act as irritants, causing a reaction which affects mainly the superficial layers of the skin and leads to eczematous lesions. As Gray points out, the physician must consider not only the nature of the irritant but also the reactivity of the skin, which varies widely in different people and may be influenced by the patient's general health and the local health of the invaded integument. Once an eczematous reaction is started, no matter whether the toxic agent is chemical, physical, bacterial, or fungal, the reaction can continue long after the agent has been removed; not only may the lesions spread locally but similar lesions may develop on other parts of the body. Moreover, a skin inflamed by fungus invasion can easily be sensitised to chemicals, so clinical manifestations of the malady—or something very like them—may be caused by injudicious or protracted therapy. In the early stages of invasion, Gray has found Castellani's carbol-fuchsin paint most effective, but 2% gentian violet, tincture of iodine, Whitfield's ointment, and 0·2% dithranol ointment are also of value; the powder used by Sulzberger and Kanof[1] for prophylaxis has also been used for treatment with success. The feet should be thoroughly washed each day before these remedies are applied. Treatment should continue for a fortnight, and thereafter only a bland dusting powder should be used. "If after another week any traces of infection remain, the treatment should be repeated and so on until the skin becomes normal. Care must be taken not to overdo the treatment or the skin will become inflamed." In cases with much inflammation, the blebs should be opened, their walls cut away, and the feet soaked and dressed with a 1 in 4000 solution of potassium permanganate. As far as possible, the feet should be kept at rest. When the inflammation subsides, Castellani's paint or 2% gentian violet can be substituted. In chronic cases associated with hyperkeratosis ung. acid. benzoic. co. is most useful, and if the hyperkeratosis is very thick the salicylic acid may be increased to 6% and the benzoic to 10%. The ointment should be rubbed into the thickened patches daily, after washing well with soap and water and rubbing away as much dead skin as possible with a piece of lint or pumice-stone. Often progress is slow, and when treatment has to be maintained for many weeks it should be stopped and a bland powder substituted for a week or two each month; otherwise it is difficult to ascertain what progress has been made. Barium sulphide depilatory paste may be used for removing a very thick horn layer, but it is a powerful irritant and must be applied with great caution. When tinea affects the nails it is very refractory. A sound method of treatment is to soak the nails in 1 in 4000 potassium permanganate, file them down, and then paint them with Castellani's paint or rub in Whitfield's ointment. Recurrence is common, especially in hot climates. If only one or two nails are involved it may be worth considering their removal, with the nail-bearing areas.

If the claims made by Freis[4] for the treatment of dermatophytosis with formaldehyde or cupric sulphate iontophoresis are confirmed his method may be widely followed. Freis uses a simple circuit containing a rheostat in series with a 45-volt dry-cell battery and a milliamp meter. The negative lead ends in a pad soaked in saline, which forms the indifferent electrode. The positive lead ends in a solution of either 1% formaldehyde or 1% copper sulphate in a porcelain footbath. The patient immerses his foot in the bath, places his hand on the saline pad, and sustains without much discomfort a current of 10–12 mA. for 20 minutes. Patients with mild infections receive two or three treatments with formaldehyde on successive days; those with severe infections are given three or four treatments on alternate days. The formaldehyde may irritate severely infected skins, and for these copper sulphate is preferable, 5–12 treatments being necessary. Freis dresses denuded secondarily infected areas after therapy with 5% sulphathiazole ointment, but only for short periods. Iontophoresis seems suitable for dealing with outbreaks of tinea pedis in naval or military establishments or in schools, and it may also prove useful in private practice.

DOMESTIC HELP IN HOSPITALS

EVEN those who hold diverse views on the future of nursing agree that the immediate crisis is closely bound up with the difficulty of getting domestic workers for hospitals. King Edward's Hospital Fund for London, which has already done great service to nursing with memoranda on the *Supervision of Nurses' Health* and *Hospital Diet*, has now come forward with timely and practical suggestions about hospital domestic staff,[5] and it is characteristic that the approach does not merely cover familiar territory but breaks fresh ground. A committee, under the chairmanship of Mr. Malcolm McCorquodale, P.C., found that the problem of getting enough domestic staff was not confined to some London hospitals but was common to all, and serious in 55 out of 60; so it would not do merely to recommend the best current practice in any one hospital. They therefore sought help from experts on personnel management, economy or dilution of labour, training, supervision, and welfare. They welcome the appearance of the national minimum

1. Sulzberger, M. B., Kanof, A. *Nav. med. Bull., Wash.* 1946, **46**, 822.
2. Nickerson, W. J., Irving, L., Mehmert, H. E. *Arch. Derm. Syph.* 1945, **52**, 365.
3. Gray, A. *Mon. Bull. Min. Hlth & E.P.H.L.S.* 1946, **5**, 100.
4. Freis, E. D. *Arch. Derm. Syph.* 1946, **53**, 34.
5. Recommendations on the Employment of Domestic Staff in Hospitals. King Edward's Hospital Fund for London. Obtainable from Geo. Barber and Sons Ltd., Furnival Street, London, E.C.4. Pp. 34. 9*d*.

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scales of pay and standard conditions of service adopted by the National Joint Council; and they suggest that, to meet the present emergency, the scheme for bringing over workers from Europe should be continued and extended. In particular they draw attention to large numbers of Balt women who are being maintained as displaced persons in camps in North Germany. In considering long-term policy they note that the status of factory work for women has greatly advanced in the present generation, but that domestic work of all kinds has lagged far behind. They ask early in the memorandum whether, in hospitals, the domestic arrangements and methods have been adjusted to meet changed conditions, or whether they have "persisted without revision since the days when domestic labour was cheap and abundant." Hospitals could lead the way in improving the status of domestic work by offering well-planned training schemes and far more opportunities of promotion. Sometimes hospitals must compete for staff with neighbouring industries, and here it is an advantage, as the committee point out, that the national wage rates are minima. Though it is natural, at first, to regard any considerable advance in wages as "beyond the means of the hospital," yet a higher remuneration has sometimes proved an economy if it attracts a better and more stable type of worker, who in fact prefers hospital work but can only afford to take the job which pays her best.

An important recommendation is that in all hospitals of sufficient size there should be a full-time domestic supervisor and welfare officer who would constantly seek recruits by keeping in touch with employment exchanges, primary, technical, and trade schools, and youth organisations, by advertising vacancies or training schemes, and by gaining the active interest of patients and visitors. She would interview and engage recruits, place them in the most suitable type of work, arrange rotas and holidays, keep records, have control of cleaning materials and equipment, modify wages within an authorised scale, and arrange for routine medical examination of staff, the meeting of National Health Insurance claims, and convalescence; she would also supervise the maids' home and plan recreations, social activities, clubs, a national savings scheme, a lending library, and opportunities for continued education. She would establish staff committees to deal with suggestions or complaints, and she might give student nurses some instruction in domestic science and practical housecraft; her own qualifications would not include nursing. The committee think that, besides having the right personality for the work, she should have training and experience in institutional management or domestic science, and that a short course in personnel management should complete her qualifications; she should be responsible to the matron except in money matters, for which she should be directly answerable to the hospital board. The post should be equal in status and pay to comparable posts in industry in the area. A special duty of the supervisor would be to have a close knowledge of the labour market in the neighbourhood, so that she could foresee changes likely to affect the supply of domestic staff, and suggest steps to meet them.

The committee advise that, as it becomes available, more labour-saving equipment should be used; but since hospitals differ in their opinions of the value of various items of equipment, they suggest that one of the ministries might organise an exhibition of domestic labour-saving appliances, showing only those which have stood the test of hospital use. Meanwhile domestic work in hospitals should be reviewed to see how workers can be used more economically: waiting at table on the doctors is out of place, they remind us, when a hospital is acutely short of staff. Ward orderlies are being appointed in a growing number of hospitals; and male domestic orderlies can be of great service. Scrubbing is not, and never was, a suitable occupation for elderly women, and few of them may need to seek it in future; whereas many men without special qualifications leaving the Services, and especially the Navy, are expert and hardy scrubbers, and some may be willing to supplement pensions by working in their local hospitals. Here again payment of a higher wage may prove an economy.

The committee favour the straight-shift system wherever possible, and make various other suggestions for the comfort and convenience of workers: provision of transport, better accommodation and amenities, a minor-ailments clinic, pensions, and attractive uniforms are all discussed. The proposal that hospitals should provide a day nursery for the children of domestic workers is outstandingly sensible; it has been adopted with great success at Roffey Park Rehabilitation Centre.

CHEMOTHERAPY OF SCRUB-TYPHUS

SINCE Woods[1] first showed that the therapeutic activity of sulphanilamide is inhibited by *para*-aminobenzoic acid this compound has received considerable attention in the laboratory and more recently at the bedside. There is evidence that it will reduce the severity of the clinical symptoms caused by pathogenic rickettsias; and hitherto there has been a striking lack of drugs effective against this group of organisms. In 1942 Snyder and colleagues[2] reported that 80% of their mice inoculated with murine typhus survived when they were fed on a ration containing *p*-aminobenzoic acid, whereas only 20% of the untreated control mice recovered. Later Hamilton and others[3] noted that large amounts of this compound inhibited the growth of epidemic and murine rickettsias in the yolk-sacs of developing chick embryos. An independent discovery[4] confirmed that *p*-aminobenzoic acid would prevent the growth of murine rickettsias in both mice and eggs.

These observations were applied clinically in louse-borne typhus by members of the American Typhus Commission[5] in Cairo with encouraging results. They gave an initial dose of 4–8 g. of *p*-aminobenzoic acid by mouth followed by 2 g. every two hours in an effort to maintain a blood concentration of 10–20 mg. per 100 c.cm. In a report so far unpublished on louse-borne typhus among Hausas on the Bauchi Plateau in Nigeria, Montgomery and colleagues[6] note that though the results of oral administration of the drug were not dramatic no deaths occurred in the treated cases, whereas the mortality for the whole outbreak was 25%. In Rocky Mountain spotted fever Anigstein and Bader[7] showed that *p*-aminobenzoic acid protected guineapigs when given at the time of inoculation of the rickettsias, and Rose and others[8] have reported a case successfully treated with the drug.

In scrub-typhus or tsutsugamushi disease *p*-aminobenzoic acid has also proved valuable. In mice[9] the oral and parenteral administration of the sodium salt of *p*-aminobenzoic acid reduced the mortality from experimental infection with scrub-typhus. Tierney[10] has now reported that clinically in man also this compound exerts a therapeutic action. The drug was given by

1. Woods, D. D. *Brit. J. exp. Path.* 1940, **21**, 74.
2. Snyder, J. C., Maier, J., Anderson, C. R. *Rep. Div. med. Sci. nat. Res. Coun.* 1942.
3. Hamilton, H. L., Plotz, H., Smadel, J. E. *Proc. Soc. exp. Biol., N.Y.* 1945, **58**, 255.
4. Grieff, D., Pinkerton, H., Moragues, V. *J. exp. Med.* 1944, **80**, 561.
5. Yeomans, A., Snyder, J. C., Murray, E. S., Zarafonetis, C. J. D., Ecke, R. S. *J. Amer. med. Ass.* 1944, **126**, 349. See *Lancet*, 1945, i, 60.
6. Montgomery, T. H. L., Budden, F. H., Findlay, G. M., Elmes, B. G. T. Unpublished report, 1946.
7. Anigstein, L., Bader, M. N. *Science*, 1945, **101**, 591.
8. Rose, H. M., Duane, R. B., Fischel, E. E. *J. Amer. med. Ass.* 1945, **129**, 1160.
9. Snyder, J. C., Zarafonetis, C. J. D. *Proc. Soc. exp. Biol., N.Y.* 1945, **60**, 115. Murray, E. S., Zarafonetis, C. J. D., Snyder, J. C. *Ibid*, p. 80.
10. Tierney, N. A. *J. Amer. med. Ass.* 1946, **131**, 280.

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mouth as a powder partly neutralised with sodium bicarbonate to lessen gastric irritation, 10 c.cm. of a 5% bicarbonate solution being mixed with each gramme of *p*-aminobenzoic acid; the best dosage was 8 g. to begin with, followed by 3 g. every two hours, which gave a blood concentration of 30–60 mg. per 100 c.cm. within two days. There is, however, considerable variation from patient to patient in the ability to build up and maintain a satisfactory blood-level of *p*-aminobenzoic acid; so ideally the blood concentration should be estimated daily—a difficult task in the middle of a typhus epidemic. To allow for variations in the severity of scrub-typhus alternate cases received the drug: of the total of 34 treated patients 16 were American, 16 Indian, and 2 Chinese. The specific treatment was continued for a week after the temperature had reached normal. In the control cases the fever lasted on the average ten days longer than in those receiving *p*-aminobenzoic acid. In the treated patients headache and lymphadenitis were less severe and complications, such as bronchitis, reduced. Of the treated cases only 1 was severe and none died, while 3 of the untreated controls died and 7 were gravely ill. Convalescence was shorter in the treated cases than in the controls. In 4 patients there was a fall in the granular white-cell count; this rose again as soon as the course was ended, but total and differential blood-counts should be done in patients undergoing treatment with the drug. Very large doses of *p*-aminobenzoic acid caused slight delirium, but when the blood-level was maintained at 30–60 mg. per 100 c.cm. there were no mental symptoms.

Since all the rickettsial diseases conform to the same basic pattern it seems probable that in *p*-aminobenzoic acid we have at last found a promising chemotherapeutic remedy for this group, though its effectiveness is not comparable to that of penicillin and the sulphonamides in bacterial infections.

BREAD-RATIONING

WE in this country have hitherto enjoyed an inestimable advantage over the people of other rationed countries—our bread has been unrestricted. As a result, though our war-time diet has been monotonous and lacking in many everyday luxuries, we have not gone hungry. Even the poorest family has been able to adjust its calorie intake to its needs. Moreover, bread, buns, cake, sausage-rolls, and the like are readily portable foods, requiring no cooking or other preparation by the consumer, so they are the ideal foundation for packed meals and those snacks which sustain when set meals are small and hasty. As rationing has become slowly tighter we have come more and more to rely on bread and flour confectionery to make up our calorie requirements. This is well shown in Dr. Friend's experience at a large boarding-school for boys, as summarised in his letter in this issue. In 1933–39, before rationing had begun, the 800 boys ate on the average about 12$^1/_3$ oz. of bread per day each, whereas in 1939–45 the daily average rose to 14$^1/_3$ oz. Now, however, we shall no longer have this unrestricted class of palatable and convenient food to fall back on: whether we get enough calories to satisfy our needs and our appetites will depend on whether these conform with the allowances drawn up by the Ministry of Food for our age, sex, and occupation.

The scales so far announced are as follows:

		B.U. per week
Children and young people	Under 4 yr.	5
	4–11 yr.	9
	11–18 yr.	13
Normal adults		9
Expectant mothers		11
Female manual workers		11
Male manual workers		15

Those manual workers who are entitled to an extra cheese ration because they take packed meals to work will get an extra 6 B.U. per week, and agricultural workers will also get 14 additional B.U. a week in busy seasons, making their total up to 35 B.U. a week. Each bread unit is equivalent to 7 oz. of bread, 5$^1/_3$ oz. of flour, or 8 oz. of flour confectionery, so the scales of B.U. per week can be read as scales of bread in ounces per day, assuming that the whole ration is taken in bread.

Bread-rationing is expected to save 7% of our present consumption, which is said to be about 77,000 tons a week.[1] Presumably the aim has been to distribute this saving of 5000-odd tons a week so that those who need bread for growth or for energy output (or both) do not go short. Unfortunately there seem to be no published figures of the consumption of bread and flour products among different age- and occupation-groups, but there are a few pointers. Thus McCance,[2] in an experimental study of rationing in the early months of the late war, found that, when other foods were restricted to about the present ration-scales and he was taking energetic exercise, his intake of bread rose to 36 oz. a day to bring his total daily intake up to about 4000 calories. The exercise he was taking would about correspond with that of a farm labourer, who gets 35 oz. daily on the present scale at busy times only. In 1937 Brockington[3] analysed the diet of families in rural Sussex and found that bread came to occupy an increasing proportion of the diet as the family income fell or as the number of children rose. In the largest family it accounted for about a third of the total expenditure on food. Brockington mentions a cowman with a family income of 49*s*. 3*d*. a week who spent 31*s*. weekly on food for himself, his wife, and his six children, and 13*s*. of this was on bread: this was equivalent to about 22 oz. of bread daily per head, whereas the family would get about 11 oz. per head on the present scales; the difference is surely too large to be made up in potatoes.

It seems then that the scales laid down will scarcely meet the needs of some of the highest consumers, and if in future more severe cuts have to be made they should be at the expense of the "normal adults" rather than of the priority classes whose need for bread is as pressing and unavoidable as the need of the farm tractor for petrol.

NEW RESEARCH FELLOWSHIPS

A BEQUEST was made by the late J. W. Luccock "to enable research to be made . . . in the hope that it will be of benefit to the human race and increase the knowledge of the medical and surgical profession as to all matters relating to the blood which may result in the alleviation of human suffering and probably the prolongation of life." This has enabled the University of Durham to establish research fellowships, whose terms were announced in our advertisement columns last week. The fellowships, which are open to both doctors and dentists for full-time research in an approved subject, are tenable by senior fellows for three years at a minimum remuneration of £600 a year, and by junior fellows for one year at a minimum of £300; for each class the tenure may be extended. An important, though fortunately diminishing, impediment to research in this country has been the failure to provide a livelihood for those who are capable of undertaking the work and willing to do so. The Luccock fellowships are a further example of the private beneficence that has gone far towards overcoming the obstruction.

1. Ministry of Food figure quoted in *Evening Standard* of July 11.
2. McCance, R. A., Widdowson, E. M. *Spec. Rep. Ser. med. Res. Coun., Lond.* 1946, no. 254.
3. Brockington, C. F. *J. Hyg., Camb.* 1938, **38**, 40.

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Special Articles

ANTECEDENTS OF CANCER

DR. PEYTON ROUS'S LECTURE

THE Walker prize of the Royal College of Surgeons is awarded quinquennially by the council " to the person, if any, who shall be deemed to have done the best work during the preceding five years in advancing the knowledge of the pathology and therapeutics of cancer." The prize for 1936–40 went to Dr. FRANCIS PEYTON ROUS, of the Rockefeller Institute for Medical Research, New York, and on July 10, when he received it at the college, he delivered a lecture on Antecedents of Cancer.

FAMILIAL TRANSFERENCE

How far back, he asked, do the antecedents of cancer go? Is it a hereditary disease? Instances of hereditary cancer are few and rare—for example, xeroderma pigmentosum, glioma of the retina, and polyposis of the intestine. We are mongrels, and a hereditary basis is not to be traced. This is true of animals also, but the influence of heredity has been got at by brother-and-sister matings of mice, so that after several generations the progeny are as one flesh. Among such mice there are liabilities to individual forms of cancer—of lung, of bone, or of mammary glands. A hereditary influence is there and must be in humans also.

Instances of hereditary cancer leave one in doubt what the basis is. Is it a peculiar responsivity to stimuli? In xeroderma pigmentosum, for instance, it is not the cancer that is transferred but a special sensitivity of the skin to light. The fact that the second eye is also liable to glioma of the retina indicates a special sensitivity in this tissue rather than a direct inheritance of the disease. There is a special sensitivity to carcinogens also. Hairless-strain mice bred fifteen years ago by F. A. E. Crew, in which, when hairless males are mated with hairy females, half the progeny are hairless and half hairy, reveal this greater sensitivity of hairless skin to carcinogens. This was brought out by the appearance of apparently spontaneous skin tumours among the hairless progeny which had been reared by a dealer in a box painted with wood preservative. Subsequently the wood preservative was found when put to the test to be carcinogenic. The hairless mice were then found to get more tumours if painted than the hairy. This is an instance of a natural liability which is inherited.

When there is a familial transference of cancer, the question arises whether it exists in the embryo. The liability to mammary cancer in mice is transferred from mother to baby through the mother's milk. A single suckle is enough. One millionth of a gramme of the mother's milk confers liability and gives origin to whole races of mice with mammary cancer. On the other hand this liability can be prevented by putting the babies to wet-nurse on non-cancerous mothers immediately they are born. This is an exquisite instance of prevention. Time is required for the cancers to grow. The mammary tissue must itself develop. At first nodules of hyperplasia appear and then one or several adenocarcinomas. The whole process is oblique. The known facts indicate that there is a virus in the milk; antibodies can be produced in response to its injection; it increases in endless quantity in the presence of cells. It is a postnatal infection, but the name is unimportant and to be held in abeyance. Like strain liability, the tendency to grow mammary tumours can be increased by painting with œstrogen.

What is the relation of these familial mammary tumours to other conditions? Kidd and Parsons in America have found a papilloma that occurs only in the mouths of rabbits and not elsewhere on the skin. If a mother has it she passes it on to her young. Other familial diseases exist; thus tuberculosis is found to be familial in Philadelphia but conditioned also by poor nutrition and other factors. There are conditioning factors in mouse mammary cancer. In some strains into which it has been introduced it peters out.

INITIATION AND GROWTH

The facts of the familial transference of mouse mammary cancer indicate that investigators must be more daring in thought. Are there potentialities for cancer yet further back in antecedents, in the embryo, for example in cell rests? Gideon Wells in a very extensive study found no carcinomas in the newborn. The earliest (Wilm's tumours) occur in infancy. Dr. Rous described his own experiments designed to test embryonic potentialities. Embryo skin transplanted into inbred mice of the same strain becomes cystic but does not grow. Wrapped around methylcholanthrene dissolved in olive oil, so that the epithelium comes in contact with the carcinogen, tumours occur regularly in a few weeks in the transplants. The same thing can be done with lung and gastric mucosa. The reason the embryo does not grow tumours is because it is sheltered from carcinogenic stimuli in utero, not for lack of liability. The uterus is the only ivory tower man ever knows.

The milk factor of mouse mammary carcinoma causes only adenocarcinomas. Must one suppose that other breast tumours have other causes, each kind a virus of its own? In that case the embryonic tissue must be supposed to require many viruses, because from it may be got so great a variety of tumours. Innumerable kinds of tumours and mixtures of tumours grow; from the lung alone twenty different tumours, each possibly needing its own virus. Is there such an endless variety? Viruses happen to be the only cause known. The possibility has to be admitted of other causes, but viruses must be kept. The possibilities perhaps transcend our imagination, and progress in knowledge cannot stand on biological precedents.

Cancer in later life is dependent on causes acting haphazard and intermittently, and so some escape. It is forced on others by unnatural conditions—for instance, on chimney-sweeps even in boys of 10 or 12 years. The carcinogenic stimuli are enormously diverse, and though tar was discovered to be carcinogenic more than 25 years ago we do not yet know how it or any others act. Present histological techniques are bankrupt for the purpose of telling us this, or the relation of ulcer of the stomach to gastric cancer, or what methylcholanthrene does to the skin. A new school of functional cell histology is required.

REPRESSION OF GROWTH

It was Ribbert who said that the problem of cancer would be solved in the skin because there every stage could be watched. Dr. Rous described his own experiments on rabbit skin from which he had discovered that growth of tumours is conditional, depending on continued use of a carcinogen. If painting be stopped those papillomas that have begun disappear; yet subsequent treatment of the same places with turpentine or chloroform, or subjection to the stimulus of wound healing, encourages growth to begin again. There are two phases of the process, the initiation of a tumour and the promotion of its growth. The initiator causes an irreversible change, but the tumour cells so caused will remain latent in rabbit skin unless continued growth is actively promoted. Even tumours which are already invasive can be arrested in rabbits by stopping treatment with carcinogen. Repression of tumour growth in skin cancer may be brought about by restricting diet by only 5% of the total. No tumours grow even though neoplastic changes have been induced.

These experiments have practical implications. Even tumours that have been started can be repressed when caught young. This has been done in the field of human cancer by taking out the gonads or repressing the action

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of androgen with œstrogen in prostatic cancer. Some but not all can be repressed. Many exist that remain for ever undetected because their growth is not encouraged. Rich and Moore found on examining the prostates at autopsy of different age-groups that cancer incidence increased from 40 years to 90 years from 17 to 29%, figures which are never reached in the clinic. Both cancer and prostatic hypertrophy might be repressed. The further back, the weaker is the chain and the more possible is prevention. Palliation by hormone control is just beginning. Cancer prevention by hormone antagonisms and on the lines indicated by the analysis of cancer incidence by the Kennaways should be pursued.

CHEMOTHERAPY OF TUBERCULOSIS

HARBEN LECTURES

ON Monday, Tuesday, and Wednesday Mr. WILLIAM H. FELDMAN, D.SC., of the Mayo Foundation (Minnesota, U.S.A.), delivered in London the Harben lectures of the Royal Institute of Public Health.

Although notable advances have been made during the past two decades in the surgical treatment and sanatorium care of the tuberculous patient, something more, he said, is desperately needed. The effectiveness of the sulphonamides against certain acute infectious diseases and the therapeutic value of penicillin make it reasonable to assume that an agent effective in the treatment of tuberculosis will eventually be found. The problem has been to find a substance that will attack the tubercle bacillus without harming the patient. The chief obstacles in the testing of new anti-tuberculosis drugs are the relatively large amount of a drug necessary for an animal test, and (compared with more acute diseases) the long time before one can obtain definitive results. The integrated efforts of many kinds of specialist are required for the development of a successful form of drug treatment in tuberculosis, and this exceedingly important work should be adequately supported by public funds.

When sulphanilamide was introduced it was shown to have a limited but definite deterrent effect on tuberculosis in guineapigs; but unfortunately none of the compounds of this character have proved of any value on human tuberculosis. A closely related group, the sulphones, proved highly effective in the treatment of experimental tuberculosis in animals, and this showed for the first time that the disease produced by the tubercle bacillus would respond favourably to a drug. When used in the treatment of human tuberculosis, the sulphone drugs could not safely be given in doses large enough to produce a similar dramatic effect; but the development of several allied compounds, which have now been used rather extensively in the experimental form of the disease, has provided much basic information justifying the belief that eventually a highly effective and non-poisonous drug—that will be of definite value in treating tuberculosis in man—will be found. The number of compounds yet untried, or capable of being made, is limitless.

STREPTOMYCIN

In his third lecture Dr. Feldman dealt with the use of antibiotics derived from moulds, bacteria, or other organisms. Penicillin, though it has revolutionised the treatment of many infectious diseases, has proved ineffective against the germ of tuberculosis; and, despite nearly half a century's research, no substance that was highly effective against experimental tuberculosis and could be used safely in human beings was found until Waksman, of New Brunswick, discovered streptomycin. In the animal, streptomycin has proved more potent than any previous remedy in the suppression of the tuberculous infection.

Tuberculosis in human beings and tuberculosis in animals are, however, distinctly different, although they are produced by the same micro-organism. The disease in animals is relatively simple in character, and fairly predictable in its course, whereas in the human being it is far more complex; so one must not assume that a drug that is effective in the laboratory animal will be equally effective in man. "A limited number of human cases of tuberculosis has been treated with streptomycin; and while in no instance have the results been spectacular, the results have for the most part been highly encouraging. It is of the greatest importance, however, to emphasise that the tuberculous patient must not refuse or delay conventional forms of treatment in favour of some inadequately tried drug that has shown promise in preliminary trials. While the experimental results with streptomycin, up to the present time, are suggestive of the future possibilities of this new drug, the facts available do not warrant the conclusion that an ideal drug for treatment of clinical tuberculosis has been found." Streptomycin, Dr. Feldman pointed out, is difficult to prepare, and the available supply is exceedingly small: it will probably be many months before there is enough to permit extensive clinical investigation. Clearly, however, it has many advantages over remedies previously tried in the treatment of tuberculosis, and it is likely eventually to find a useful place in medicine. Meanwhile we have learnt that the tubercle bacillus, like the pneumococcus, is definitely vulnerable to the suppressive action of specific drugs. This observation has stimulated investigators all over the world to search for other and better substances, either synthetically from chemicals, or obtained from other micro-organisms.

THE WORLD HEALTH CONFERENCE

FROM OUR SPECIAL CORRESPONDENT IN NEW YORK

AT the time of writing (July 10) the conference has completed its first three weeks, and its sessions are expected to end in about another ten days.

The technique by which the conference transacts its business has now become standardised. The conference meets in plenary session or in one of its five working committees,[1] which are in effect plenary sessions of limited scope. Each working committee has its own small drafting committee. The text of the constitutional proposals drawn up in Paris is discussed, exhaustively and exhaustingly, paragraph by paragraph. The consensus of opinion being obtained and any amendments adopted or rejected, each portion of the text is then submitted to a drafting committee which determines the wording. Ultimately the entire compilation will be returned to the plenary session for acceptance and signature.

Much discussion was aroused by an American proposal, which was eventually rejected, to strengthen the office of the director-general and to weaken the proposed executive board. On the motion of the United Kingdom, it was voted that the director-general shall have direct access to the national health administrations of the various countries. The director-general was also accorded access to non-governmental agencies within member states, to international non-governmental organisations such as the International Red Cross, and to government departments other than health departments.

The Canadian delegation submitted a protocol to establish an interim health commission for the purpose of discharging the functions of the World Health Organisation until such time as the world health convention establishing the W.H.O. comes into force.

The legal committee developed but did not complete its plans for the absorption of the Office International d'Hygiène Publique and UNRRA into the W.H.O. or its Interim Commission. It was agreed that such absorption should be rapid and complete, since it was undesirable to have a multiplicity of intergovernmental health organisations. In the case of UNRRA, once the W.H.O. has declared its readiness for the transfer, an interval of two months will be allowed for technical and secretarial details.

1. See *Lancet*, July 13, p. 58.

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It was decided that territories or groups of territories which are not responsible for the conduct of their international relations may be admitted as associate members upon application made by the tutelary power. The number of such associate members is tentatively set at twenty; their rights and obligations remain to be determined. Such territories will have the right to be represented in regional agencies.

The conference agreed that regulations adopted by the Assembly "would become effective as to all member States after due notice has been given of their adoption . . . except for such members as may notify the director-general of rejection or reservations within the period stated in the notice." Member States will also undertake to prevent the importation into their territories of drugs which do not conform to standards adopted by the Assembly.

The thorny question of the Pan-American Sanitary Bureau was finally "decided" in the sense that it should be integrated as soon as practicable with the W.H.O.

As might have been expected, the problem of the location of headquarters produced long argument. Some delegates felt that the site need not be specified in the constitution. Australia and Chile suggested that the site chosen should be the same as that of the United Nations. The Ukrainian delegate spoke temptingly of the cultural advantages of Paris; the French delegates did not disagree, and Byelorussia supported this view. Ultimately it was voted that the headquarters shall be located where the W.H.O. shall decide after consultation with the United Nations.

CANADIAN HONOURS

AMONG recipients of honours conferred on Dominion Day were the following members of the medical profession:

C.B.E.

H. C. BAZETT, F.R.C.S.

R. D. DEFRIES, O.B.E., M.D. Toronto, director of Connaught Laboratories, Toronto, Ontario.

ANDREW HUNTER, M.B. Edin., F.R.C.S., chairman, standing committee on nutrition, Department of National Defence.

T. C. ROUTLEY, M.D. Toronto, general secretary, Canadian Medical Association, Toronto, Ontario.

O.B.E.

T. D. BAIN, M.D. Toronto, director of medical services, Department of Veterans Affairs.

JAMES CRAIGIE, M.B. St. And.

T. G. H. DRAKE, M.D. Toronto.

ARMAND FRAPPIER, M.D. Montreal.

A. K. HAYWOOD, M.D. Toronto.

G. L. HODGINS, M.D. Toronto.

J. S. MCEACHERN, M.D. Toronto.

I. M. RABINOWITCH, M.D. Montreal, director of metabolism, Montreal General Hospital.

N. R. RAWSON, M.D. Lond.

A. B. SCHINBEIN, M.D. Toronto.

W. B. SEATON, M.D. Toronto.

INFECTIOUS DISEASE IN ENGLAND AND WALES

WEEK ENDED JULY 6

Notifications.—Infectious disease: smallpox, 0; scarlet fever, 997; whooping-cough, 2247; diphtheria, 290; paratyphoid, 10; typhoid, 13; measles (excluding rubella), 4524; pneumonia (primary or influenzal), 478; cerebrospinal fever, 37; poliomyelitis, 9; polio-encephalitis, 0; encephalitis lethargica, 1; dysentery, 87; puerperal pyrexia, 144; ophthalmia neonatorum, 79. No case of cholera or typhus was notified during the week.

Deaths.—In 126 great towns there were no deaths from scarlet fever, 1 (1) from enteric fever, 1 (1) from measles, 8 (1) from whooping-cough, 3 (0) from diphtheria, 32 (5) from diarrhœa and enteritis under two years, and 6 (0) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 243 (corresponding to a rate of 28 per thousand total births), including 22 in London.

In England Now

A Running Commentary by Peripatetic Correspondents

WE have 1300 Canadian brides on board, mostly trousered, and a spattering of male civilians. "Isn't it lovely?" said one of the brides as she looked into our ten-berth, formerly de luxe, cabin (the brides are in canvas-sided affairs in which there is not room to swing even a small cat). The entire two promenade decks are marked "out of bounds to males"—as a measure of protection, perhaps, to the males—but the rain-swept, wind-swept, spray-swept boat deck is in bounds to all.

The first of the ship's orders issued a dire warning to all passengers to avoid sweets, because they "have a tendency to disrupt the stomach." But within three hours of the opening of the canteen several hundred pounds of sweets were purchased. Next day many stomachs were disrupted, more, it seemed probable, by the Atlantic swell than by the sweets. Since then shouts of girlish laughter at the slightest toss of the ship have been replaced by a gentle closing of the eyes and inactivation until the toss was over, and by silence, except for the occasional rush of feet and regurgitant noises. Laughter has ceased, jokes have no longer been welcome, conversation has stopped, tempers have been frayed, and faces have paled and developed a greenish hue reminiscent of "Blithe Spirit." People sit in strange places—on the stairs, on the floors of corridors—meditating with their heads in their hands. At meal-times mastication is slowed, food played with, fats brusquely refused. But I hope the disruption of the stomach and the consequent desire for dissolution won't last much longer.

* * *

As I drove to my laboratory this fine autumn morning, it was impossible to deny that South Africa is a lovely country to live in. Up to the left towered the wooded slopes of Devil's Peak and behind that Table Mountain. Over to the right one could see the serried ranks of the Hottentots Holland mountains, the intervening thirty miles of the Cape Flats being covered in mist. The University buildings shone in the early sunshine. The main block probably has the finest site of any university in the world and I envy my academic colleagues their lovely view. The medical school is two miles further on, near the Groote Schuur Hospital. Its chief outlook is on to the local cemetery (now full), a situation which has inspired innumerable jokes from my irreverent lay friends. From my office window, however, I can look out on a herd of buck disporting themselves in the Rhodes preserve.

Our medical school is reputed to be the largest in the British Empire outside the United Kingdom—not that mere size is any virtue; I am now forced to duplicate my medical lectures because all our theatres are too small. The University is building as fast as it can a theatre of adequate size behind my building—a mixed blessing, because one's words of wisdom blend with the roar of cement-mixers and the chatter of pneumatic drills.

The first lecture of the day over, one then takes a tutorial for ex-soldiers. I cannot speak highly enough of the industry and keenness of these men. After the last war, when I was a student, I remember the same thing. Of all my teaching, I enjoy most my bi-weekly mental skirmish with these students, and they seem to like it too. There is no doubt that the tutorial system is the best way of teaching my subject—in fact, if the number of students allowed, I would like to abolish formal lectures and teach only small and intimate classes.

One essential here is a good knowledge of geography. On returning to my office, I find a student who has to return urgently to Lusaka. May he have a week's leave? He has arranged to fly there and back. My students range from Kenya and the Belgian Congo to this southernmost tip of Africa. This has, of course, largely arisen from war conditions, when travel to, and study in, Europe was impossible, but we hope that the Union will become a centre for medical education and research for the whole of Africa south of the Sahara. The newly founded Council for Scientific and Industrial Research has the same plans, and we are looking forward to big advances in our knowledge of tropical and subtropical medicine.

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Two of my research students now come to ask for advice and show me their results. The research side of one's life holds a delight that cannot be understood by those who have not experienced it—saving creative artists, such as composers and painters, though I feel hardly worthy of ranking in such lordly company. I had the good fortune to work for several years under the distinguished nutritionist who now holds high office in UNO. This country is full of nutritional problems and we are at last on the way to attacking some of them. In collaboration with my colleagues in the Groote Schuur Hospital, my department is planning studies on the nutritional metabolism of our very varied population. My own immediate interests lie in the processes of calcification and tooth-formation, and these phenomena form an ideal background on which to study nutritional influences.

One's day often ends with that bane of all university staff—a faculty meeting or a committee. Though I am a good democrat, I do sometimes feel that the business could be done just as well and twice as fast by a manager. However, our existing method ensures that everyone has a chance to speak and everybody is more or less satisfied with the decisions taken. But it is with distinct relief that one turns homeward in the short African twilight. This evening the Municipal Orchestra is playing my favourite Brahms symphony, so the day will end well.

I see that what I have written has nothing South African about it—such a professor's day might occur equally well anywhere. I have not mentioned the joy of the long sunny days, the profusion of the wild flowers and the profusion of flowers one can grow oneself (and the profusion of pests ready to undo one's good work), the sunrises and sunsets on the Karroo, the kindliness and friendship of the South Africans wherever one goes, and many other things. These must wait for another instalment.

* * *

This morning we passed Aden, and could verify the general accuracy of the "barren rocks" description of the place. My own appreciation of natural beauty was a bit dimmed by a rather hectic night before—not convivially hectic, of course, on this dry troopship, but made hectic by untoward incident.

The June heat in the gulf of Aden makes it worth while to sleep on deck, and after nightfall a rash of scattered mattresses appears on the deck, among them mine. By some mischance, absence of mind had led me to equip myself with a pyjama jacket but no trousers, so I was ill equipped to face this critical world. But it was a calm night, and I anticipated that my getting-up would be leisurely enough to be decorous in every way.

How wrong I was! At about 4 A.M. a very brisk wind sprang up and leapt on the bedclothes. Soon I found myself in a scene of confusion, with my bed doing its best to leave me in what was beginning to be a faint dawn, and might soon be a censorious one. It became clear that I would have to move to the nearest sheltered part of the deck, away from the place which I had chosen for its coolness in the calm but which had now become the playground of a mischievous Æolus. So I rolled things up as quickly as I could, and ran for shelter. But first a pillow and then a sheet escaped from the bundle, and I had to pursue them; and one just can't pursue a sheet flying in the wind and not arouse a certain amount of interest—interest which I repaid with glances as reassuring as I could make them.

When at last I got myself into the middle of a bundle that had by now lost all coherence, I found I was lying on my watch. I then bethought me of my spectacles, which I had also put under the pillow. I made a frantic search, for my myopia is about eight dioptres, and my far-point without them about a foot. I couldn't find them in or near the bed, so I groped down to the cabin and looked for the spare pair for an anxious ten minutes—anxious because I couldn't quite repress the fear that I had packed them "Not wanted on voyage" (I always start packing with a clear plan, but the plan has vanished long before the last of the stuff I have to pack).

The story ends happily, for not only did I find the spare pair at the bottom of a badly packed suitcase but the missing pair were also handed in later in the day by a keener-sighted person.

* * *

George's latest: "*Mummie is the root of all evil...*"

Letters to the Editor

"ATTRIBUTABLE" VASCULAR DISEASE

SIR,—The undersigned, who have been responsible either in Great Britain or abroad for the care of Service patients suffering from peripheral vascular disease, wish to record their concern that in the award of pensions it is not always realised by the authorities that many of these conditions (including for example thrombo-angiitis obliterans) may directly result from, or be substantially aggravated by, conditions of war service.

B. C. MAYBURY, J. PATERSON ROSS,
J. R. LEARMONTH, A. M. BOYD,
JAMES J. MASON BROWN.

DESOXYCORTONE AND ARTHRITIS

SIR,—There are fallacies in R. G. Harrison's criticism (June 1, p. 815) of Selye's work which Selye (June 22) should have noted. Harrison arranged Selye's results in 3×2 contingency tables and pointed out that the difference between the *three* groups, thyroidectomised, adrenalectomised, and injected controls, was insignificant. He then deduced that Selye's contrast between *two* groups, thyroidectomised and adrenalectomised compared with controls, was unjustified. The logical fallacy is obvious. Chi square is a measure of difference, and the resemblance between thyroidectomised and adrenalectomised animals lessens the contrast with the controls. The results should have been arranged in a 2×2 contingency table. If this is done, the results in Selye's first experiment are significant even when a more accurate mathematical technique is applied. Even if Selye's results had not obtained the conventional level of statistical significance, the numbers are small and it could not logically be claimed that the effect of thyroidectomy or adrenalectomy could be disregarded.

I am, of course, not criticising Harrison's excellent experiments, still less suggesting that Selye's technique is free from criticism. But the arithmetic ease with which certain tests like chi square can be applied is leading to a disregard of the underlying logical principles. It is better not to use statistical methods at all than to misuse them, especially during the present phase of medical literature when the appearance of a few mathematical symbols leads to a metaphorical doffing of the hat and a disregard of the more important subject of adequate controls.

Harrison's strictures can also be criticised on biological grounds. There is a wealth of evidence that important genetic differences exist between various strains of laboratory animals, and results from other countries should be judged with reserve unless really careful attempts have been made to reproduce them.

London, W.1. DENYS JENNINGS.

ARTIFICIAL PNEUMOPERITONEUM

SIR,—Much air has flowed under the diaphragms of some of our patients since we first began to use pneumoperitoneum (P.P.) combined with phrenic paralysis in treating pulmonary tuberculosis. The object of my article was not to prove the value of this treatment, but to report the low incidence of complications in a large experience and to record some of the things to be learnt from these happenings. But Dr. Robinson (June 22, p. 942) suggests that in using P.P. one is more likely to cause air embolus than in pneumothorax. I reported five cases in 13,000 injections: therefore I cannot agree with him. At this hospital puncture of the viscera has been diagnosed even less often, but *may* be more common; even if it is twenty times as common as we recognise, it is still surprisingly rare, for it might occur at every induction. If the usual site (near the left costal margin and just lateral to the rectus) is used for injection of air, the operator and the patient will not have unnecessary anxiety.

In regard to the measurement of intra-abdominal pressure, this can only be achieved when an air-bubble has been introduced into the peritoneal cavity. I believe that Dr. Jarman (June 1, p. 833) and I are here essentially in agreement. With an established pneumoperitoneum an air-space is present, and the pressure therein can be recorded on the manometer by connecting the space to

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the manometer through a needle and tubing. This pressure is the resultant of the various forces acting on the space, such as muscle tone and weight of viscera. Usually it is slightly greater than that of the atmosphere, and according to the usual conventions is recorded as (e.g.) +8 cm. H_2O. That the needle point is in the air-space is judged by previous experience, by the knowledge gained from X-ray screening, and by noting the "feel" of the needle through the fascial lining of the abdomen. When the manometer rises to the level of the usual positive pressure in that patient it is confirmation of the space having been entered. Pressure in a remote part of the abdomen (e.g., the right iliac fossa) will increase the recorded pressure in an uncomplicated pneumoperitoneum. Sometimes the changes due to diaphragmatic movement, or the movements of the lower ribs, do cause a respiratory swing, usually giving a more positive pressure on inspiration and a lower pressure on expiration.

The value of pneumoperitoneum should not be judged alone but in relation to the whole of the programme of active treatment for the patient. It is no panacea, but is frequently useful as a preliminary to, or in combination with, other treatment; and in some patients it may be enough. As Dr. Jarman says, it is valuable in the period of that unfortunate delay in present times before admission to sanatorium. With ordinary care and experience it is a reasonably safe procedure, and therefore justifies a place among our weapons against tuberculosis.

F. A. H. SIMMONDS.

Clare Hall County Hospital, South Mimms, Barnet, Middlesex.

BREAD-RATIONING

SIR,—Apparently from the published bread-ration scales the school-boy or school-girl and undergraduate on attaining the age of 18 years is classed as a normal adult, and his or her allowance per week drops from 13 to 9 bread units (B.U.); while, should he be lucky enough to become a manual worker he gains 2 B.U. per week.

Increase of growth is possible up to the age of 25 years, and in addition to this there is the added strain of scholarship work and the responsibilities of leadership entailed by monitorial and other activities, in the one class, which correspond closely to the extra output which is apparently and rightly expected from the manual worker.

Statistics kept at Christ's Hospital since 1913, of which I quote only two periods of 6 years each (1933–39 and 1939–45), give a fair comparison between a non-ration and a ration period.

From 1933 *to* 1939, of an average of 810·5 boys, 17 were over 18 years; 77·8 were under 11 years; and 715·7 were between 11 and 18 years. Their allowance under the suggested scale would be 10,157 B.U. per week. During this period they ate the equivalent of 10,010 B.U. per week (bread only).

From 1939 *to* 1945, of an average of 803·8 boys, 13·9 were over 18 years; 75·7 were under 11 years; and 714·2 were between 11 and 18 years. Their allowance under the suggested scale would be 10,091 B.U. per week. During this period they ate the equivalent of 11,526 B.U. per week (bread only), each boy's requirements on an average thus exceeding the suggested allowance by 1·8 B.U. per week.

Appetite and requirement vary with the individual and are impossible to assess within narrow limits, but these figures suggest that the average requirement per boy is now greater than the suggested allowance. It is important to note that just as in 1914–18 the consumption of bread increased proportionally with the reduction of meat and fats, so from 1939 to 1945 a similar increase has occurred.

It is fair to expect that if the suggested restriction is enforced, the rate of growth, which in my opinion is a reliable index of the general health of the adolescent, must show a regression. It has been suggested that the vacuum can be filled by potatoes, which now seem to be the only substitute available without points. The objections to this are: (1) the amount of potatoes which the English adolescent will consume is limited; (2) recent experience has shown that the supply of potatoes can be very variable; and (3) in institutional catering shortage of labour and equipment put a definite limit to the quantity of potatoes which can be handled.

Surely it follows that in any plan which has the interest of the future generation at heart it would be wise not only to increase the allowance for all adolescents but also to make one class of all students from 8 to 25 years of age.

G. E. FRIEND
Christ's Hospital, Horsham. Medical Officer.

THANKS FROM BELGIUM

SIR,—In May of this year the Association of Surgeons of Great Britain and Ireland invited to their annual meeting a number of French and Belgian surgeons. In the name of the Belgian surgeons I wish to tell our British friends and colleagues how much we appreciated the opportunity to see their work, and how touched we all were by their friendly and warm welcome.

The meeting we attended at the invitation of the president, Sir Max Page, was a brilliant success from the scientific point of view. In meetings, demonstrations, and operations, in official and private entertainments, we made fresh contacts which we hope will be the beginning of a more intimate association and closer collaboration between our country and yours. The British Council, which misses no opportunity to help, had arranged to extend our visit to other centres, and owing to the kindness of Prof. Harry Platt, of Manchester, Sir Hugh Cairns, at Oxford, and Prof. J. R. Learmonth, of Edinburgh, we saw in these centres beautiful work of the same high quality as we had seen elsewhere.

Such stimulating visits are of the greatest possible interest for the future, and we wish formally to express our admiration and thanks not only to our colleagues and friends but also to the university authorities, the Royal Colleges of Surgeons of England and Edinburgh, and the British Council. We hope we shall meet again often on both sides of the English Channel.

FRITZ ALBERT
Liége. Professor of Experimental Surgery.

PROF. ERNST FREUND

SIR,—I feel sure you would wish your attention called to some errors which have crept into the obituary of Professor Freund in your issue of June 22.

I did not establish the Pearson Foundation in Vienna "at a cost of half a million pounds," or, indeed, any sum remotely like it; and Freund's treatment was not given "a trial" at the Mt. Vernon Hospital—unless the treatment of five cases, for a month, and without adequate verification and control of whether the treatment is being thoroughly and correctly applied, can be called a "trial." Indeed, the exaggeration seems almost as fantastic in one case as in the other.

In the sixteen years in which I have contributed to the support of Freund's work, I have yet to find one surgeon or physician who has—after prolonged trial on many cases—found the treatment ineffective, or one who believed it a cure. It has been on trial for the last eleven months at the Metropolitan Hospital in London; the results seem to compare not unfavourably with those obtained in Vienna; and these results appear to me to justify, and even in the public interest demand, a painstaking scientific inquiry into the theoretical basis of Freund's treatment.

Liphook, Hants. FREDERICK F. A. PEARSON.

PROPHYLACTIC PENICILLIN IN SURGERY

SIR,—On July 6 Mr. Wood Power advocated the systemic use of penicillin "in all major operations," and gave a list of operations in which he has found it of particular advantage. On July 13 Mr. Fraenkel added tonsillectomy to the list. I agree that in operations in which infection by "penicillin-sensitive" bacteria exists or is likely penicillin is valuable beyond estimation. But I would prefer to confine the *routine* prophylactic use of penicillin to such cases, giving it also whenever, for some special reason, infection is to be feared. I am anxious lest *routine antisepsis* should lessen the united effort of the theatre team to achieve safety by exact procedure in preparation and during the operation, with on the surgeon's part care, gentleness, and hæmostasis.

If in a clean case a rising temperature during the post-operative 48 hours should suggest infection the prompt massive administration of penicillin, with full standard doses of sulphadiazine for 4 or 5 days, will still be effective if the fever is due to "sensitive" bacteria. And the surgeon, deeply grateful for such welcome help, will not fail to look into possible sources of infection.

Oxford. G. R. GIRDLESTONE.

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Reconstruction

HOSPITAL MANAGEMENT COMMITTEES

FROM A CORRESPONDENT

THE National Health Service Bill has now finished its course through standing committee and is awaiting further discussion on report stage in the House of Commons. So far as the actual clauses of the Bill are concerned the position of hospital management committees has been little changed in committee. Since this Bill institutes a long-term programme of development, and in days to come it is only the statutory position which the executive will be bound to consider, it is profitable to look first at the position of hospital management committees as it appears from the clauses of the Bill, without regard for the moment to the declarations of the Minister of Health as to what he thinks and intends that these committees should be.

(*a*) A hospital management committee is to be appointed by the regional hospital board.

(*b*) Subject to regulations and directions given by the Minister or the regional board, it shall exercise on behalf of the regional board such of the functions of the board relating to the control and management of its hospital or group of hospitals as may be prescribed by regulation.

(*c*) All its officers—medical, nursing, administrative, domestic, and others—are the officers of the regional boards.

(*d*) All the expenditure of the committee shall be defrayed by the regional board.

(*e*) The committee will not be a body corporate—as the regional hospital board and the board of governors of teaching hospitals are to be.

(*f*) All proceedings for the enforcement of rights acquired or liabilities incurred by the committee in the exercise of its functions are to be brought by or against the regional hospitals board.

The Minister has said that before the report stage of the Bill he will consider an amendment to enable hospital management committees to accept gifts on trust.

This is the statutory position of a body on which more than on any other body or person—the Minister included—will depend whether a hospital functions in an efficient and humane manner. As the body responsible for the day-to-day administration it is the arbiter of the interests of the patients and the needs of the public served by the hospitals group. The committee will be concerned with the internal management of one or more institutions with a total bed capacity in the region of 1000. What does this mean? It means that in these institutions there should be a staff equivalent to, say, 40 full-time medical officers, and nursing and domestic staff numbering 600–700. The annual expenditure may be of the order of £250,000, probably more. As many as 16,000–17,000 patients may pass through the wards in the course of a year and if outpatient departments are part of the work the number of patients attending, if the institutions are in a populous area, may be 90,000. Clearly the burden of responsibility which is to be placed upon a hospital management committee will be a heavy one. Yet of all the bodies provided for in the Bill for the administration of the various parts of the health service, the hospital management committee is the only one which is to be denied statutory rights of any kind. And this denial is deliberate.

RESPONSIBILITY WITHOUT RIGHTS

During the tenth day's proceedings of the standing committee an amendment was moved by Mr. Lipson to the effect that the duty of managing and controlling a hospital or group of hospitals should devolve upon the hospital management committee on behalf of the regional board in accordance with regulations and such directions as may be given by the Minister, and that, in particular, it should appoint hospital officers, except specialists, maintain premises, acquire and maintain equipment, furniture, &c., and be given powers to delegate to a house committee for each hospital in a group such functions in the control and management of that hospital as it thought fit.

The Minister stated that he was "deeply sympathetic" with the purpose of the amendment but that he could not accept it. The reasons he gave call for study, but before considering them, note must be taken of a remarkable statement which the Minister propounded. It was as follows:

> "The whole tendency of the argument has been that we can make these people [i.e., the hospital management committees] responsible bodies and give them higher status only by decanting into them specific rights under the Bill, so that they can have rights—not responsibility—which I don't want to give them. *Responsibilities, yes; but statutory rights, no; because once they begin to have statutory rights they begin to achieve independence, and once they begin to achieve independence we can no longer hold them responsible for certain things they do.*"

Perhaps this statement was framed in the heat of debate and is not the Minister's considered view. Let us hope that this is so. Otherwise it would give solid ground for the fears of many—and they include those as anxious as the Minister to see the aims of the National Health Service fully realised—that the service as at present planned will be overcentralised and excessively bureaucratic. The idea that a body or person with statutory rights cannot be held responsible for the performance of administrative duties is nonsense, and surely is alien to the British conception of democracy based upon law. And it may be asked why, if the Minister's contention were true, he should apparently regard it as applicable only to hospital management committees and not also to the central council, the regional boards, the executive councils, and the rest of the administrative bodies, all of which have some statutory rights.

THE MINISTER'S ARGUMENTS

Leaving this puzzling utterance behind let us look at the other reasons which the Minister put forward against Mr. Lipson's proposal. They may be summarised as follows, using so far as possible the Minister's own words.

(i) The scheme for the hospital service is experimental and may require modification from time to time in the light of experience. Such organic changes would become impossible if on every occasion there had to be an amending Bill.

(ii) If the Minister had to accept the powers of every management committee as defined in the Bill, bad management committees would be perpetuated by the Bill itself.

(iii) It may be necessary in different places to have different schemes.

(iv) The officers appointed by hospital management committees must be in contract with the regional boards, because otherwise it will not be possible to bring about a necessary degree of uniformity, not in the kinds of individuals who are appointed, but in the conditions of rank. "We cannot have the management committees varying every contract whenever they like."

(v) By having all officers in contract with the regional boards, far greater mobility within the service will be attained. At the present time hospital staffs are "completely enchained by their particular institutions."

This is not an impressive array of convincing reasons. Of course there must be flexibility in the operation of a scheme which, admittedly, is based largely on theoretical conceptions; and much must be left to be dealt with by regulations; but on the very important question of the responsibility of the hospital management committee to the regional board, the Minister has in the Bill to a large extent prejudged the issue. The Bill requires that all officers must be officers of the regional board, that all expenditure of a hospital management committee must be defrayed by the board, that the board and not the hospital management committee can sue or be sued in respect of the exercise of functions by the latter. These matters cannot be dealt with or altered by regulation.

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If experience shows that in these respects a mistake has been made, an amending Act will be necessary. What makes the Minister so sure that in these respects there will be no need for modification? Further, these matters will in practice limit quite materially the extent to which the Minister will be able to carry out his declared intention to secure "a very considerable devolution of responsibility to the management committees." The Parliamentary Secretary stated on the ninth day of the standing committee's proceedings that the hospital management committees would be allowed to select, appoint, and dismiss the ordinary staff of the hospital or hospitals with which it is concerned. But we may ask: since actions for wrongful dismissal will be against the regional board, may not that board reasonably require that all dismissals shall be subject to its approval. The regional board as the employer will be the body on which the eyes of the staff, particularly the more senior, will be focused. From that source comes promotion.

Mr. Bevan wishes the hospital management committees to have powers of spending within a global budget; but all expenditure of a committee is to be defrayed by the regional board. Inevitably the regional board will have to have a large accountancy staff. Is it unreasonable to expect that this staff will operate on the same lines as corresponding staffs in the past—the forms, the returns, the correspondence over the smallest variation from approved estimates? Freedom of expenditure within a global figure either by regional boards or hospital management committees is not provided for in the Bill, and there is no solid ground for thinking that, if not from the start, yet within a relatively short time, the long-established practices and procedures of central finance departments will not begin to be insisted upon; and then goodbye to freedom within a global figure.

What about some of the other reasons put forward by the Minister? On (ii) a management committee is appointed by the regional board; if a bad one is appointed, the fault will lie with the regional board. Moreover the management committee is to be subject to specific direction by the Minister and the regional board, while the Minister has default powers. A query seems permissible on (iii); does it mean that some hospital management committees will have little delegated power (e.g., not even the limited right to choose junior staff); and if so what considerations is it expected will give rise to such variations? On (iv) leaving aside the question of whether a complete uniformity is desirable—experience of the operation of the Rushcliffe Committee's recommendations on nurses' salaries may be held by some to raise doubts—it is not true that uniformity in the terms of service can be secured only by the arrangements proposed in the Bill. On (v) Mr. Messer in the standing committee voiced the view of many who have been concerned with the nursing service, that in regard to nurses it is essential that they should be identified with a particular hospital.

THE RIGHT SOLUTION

To Mr. Bevan *Hansard* attributes the rhetorical question "How will it be possible for the regional boards to function properly if they are the puppets of the Minister?" It is equally apposite to ask how can the hospital management committees function properly if they are the puppets of the regional hospital board. It looks very much as if puppets is what they will be, and as if the promised considerable devolution of responsibility will be more apparent than real. And that will mean that the dangers—which the Minister has been inclined to treat lightly as the figments of imaginations perverted by vested interests—of overcentralisation, of excessive strain on members and officers of the regional boards, and of a stifling of local initiative will materialise.

These dangers were dealt with by a special correspondent in the *Times* of July 12, but he saw them from the angle of the burden which would be laid upon the regional boards and thought that they might be diminished by making the regions smaller and having, say, 30 regions, each with an average population of 1,300,000, instead of 20 regions each containing approximately 2,000,000 persons. While the special correspondent's analysis of the situation seems a true one, it is doubtful whether his solution is the best. Far the better plan, both from the point of view of avoiding the dangers of overcentralisation of which he and many others are so conscious, and at the same time of making certain of attracting well-qualified people to the hospital management committees, would be to ensure, in the Bill itself, that hospital management committees were responsible agents for the regional boards rather than rightless puppets. By so doing the Minister would not, in any way, alter the main structure or objects of his Bill, and the devolution of responsibility from the Minister to the regional boards and from the regional boards to the hospital management committees would be effected more efficiently than under the arrangement at present proposed.

Parliament

ON THE FLOOR OF THE HOUSE

WORK in the House was comparatively light last week, and several times members were able to get to their beds by midnight. It was almost a holiday, and the House has been in sunny mood, like the weather, with a few thunderstorms of not very serious dimensions. Perhaps it is the sunshine, or perhaps it is the royal garden-parties at Buckingham Palace; but things have certainly looked brighter, especially the dresses of the women members; and even men, in disinterred morning coats and toppers, have bedecked the summer scene with fugitive memory of older days. Karl Marx, who knew this country well, was of the opinion that in England a social revolution would take place without violence and bloodshed. But it is doubtful if he realised it might take place according to the accustomed ritual of the British way of life and to the tune of the music of military bands in the parks.

We had a debate on the Colonies—a most polite debate. Mr. George Hall began his review of Colonial affairs by paying a warm tribute to the work of his predecessor Mr. Oliver Stanley; and Mr. Stanley reciprocated. But this song of continuity was not echoed by all the members, some of whom evidently thought the Colonies need much more extensive alterations and repairs—as regards our treatment of their native inhabitants—than would be provided by the Colonial Development and Welfare Fund. Mr. Hall did not say, but he implied, that the aeroplane has now made the Colonies almost suburban. And the close juxtaposition of races with such differing standards as those of Limehouse and Lagos will force attention to the need of raising the very low standards of physical health and efficiency and of purchasing-power of the African of Lagos to at least those of Limehouse.

The only debate in which angry passions were roused was that on the cut in the soap ration. Mr. Strachey said he had scoured the world for fats, but members were left to consider how they could scour themselves with one-seventh less soap per month. MEDICUS, M.P.

FROM THE PRESS GALLERY

Health Services in the Colonial Empire

In the House of Commons on July 9 a general debate took place on Colonial affairs. Mr. GEORGE HALL, the Secretary of State for Colonial Affairs, said that without great improvement in basic economic conditions few of the Colonies could be expected to show substantial social or political progress. Improved social services

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could make a contribution to greater efficiency and productivity, and the field of advance which could be opened up in the Colonies by better education was immense. If we could succeed by patient industry in providing the Colonies with more liberty, higher standards of health, and better education, and with larger opportunities of creating their own wealth, then we should have carried out our trust.

Mr. OLIVER STANLEY, speaking on the Colonial medical services, said that in the past much too much emphasis had been placed on curative medicine and not nearly enough on preventive medicine. While the hospitals undoubtedly caught the public eye, he wondered whether they really got down to the fundamentals of the Colonial health situation. On one of his visits he saw in one Colony a very good hospital, recently erected, very well equipped, with a great record of cases. But not many miles away he saw an experiment, consisting simply in bricking up the surrounds of the local well and instilling into the population a knowledge of water hygiene. The hospital cost thousands of pounds, whereas the water experiment did not cost a tenth of the money; yet he believed that the latter did more for the health and happiness of the people in that area.

Dr. HADEN GUEST agreed that health was not a matter of hospitals. Many of the large populations in tropical Africa were badly nourished and suffered from many diseases which were comparatively easily preventable. The Colonial Office ought to take its courage in both hands and make up its mind with regard to medical services. First of all it should recognise the impossibility of getting the doctors required to establish a medical service comparable to the National Health Service in this country: the doctors for such a scheme did not exist, and the Colonial revenues could not afford the cost. But an effort should be made to get a complete sanitary inspection of the whole tropical area with a view to prevention of disease. For example, the headquarters of leprosy in the world was Nigeria, and when he was there just before the outbreak of war he calculated that there were about a million cases, affecting some 5% of the population. Leprosy could be prevented from spreading by hygienic measures which could be carried out by a large staff of trained African sanitary inspectors: it would take a very long time to disappear, but if we began the work it could be done. The same applied to sleeping-sickness and malaria—sanitation was the real requisite. This was also true of tuberculosis, which was one of the chief diseases which affected workpeople once they began to live in houses and overcrowded townships. The housing conditions in many parts of Nigeria were excessively bad, and would not be tolerated anywhere in Europe. If we wished to have our Colonies properly developed we must promote a healthy population, and much of the work could be done by people who, though not medically qualified, could impose a system of hygiene and sanitation under the supervision of medical men.

Dr. H. B. MORGAN said he could not see any hope in Mr. Hall's speech that the Labour Party was making any new advance with regard to Colonial development. Welfare work and trusteeship were not enough. Had we not realised that these Colonial peoples were human beings, brothers of a different race and colour, but capable of great economic, cultural, and intellectual development, and could we not help them to go forward? Turning to the recommendations of the West Indies royal commission, Dr. MORGAN asked whether it was really correct to say that these islands were overpopulated. Was there not now a shortage of labour and were not an increasing number of people being taken to work in the United States, thus increasing the shortage? The commission had recommended that birth-control centres should be set up to teach uneducated women, whose wages were a shilling a day, how to control the increase in the population. But who was to pay for the condoms? We were trying to relieve the overpopulation in the West Indies by telling the people to do what could not be done even in this country. He was glad that a great improvement was being made in the training of West Indian nurses in British hospitals; but, because of malnutrition and want of vitamins, medical services and good hospitals and tuberculosis sanatoria were needed. We were still trotting along or marking time in the barrack square of Colonial development, and still doing the same old things we did fifty years ago, only now and again turning in a new direction.

Mr. CREECH JONES, under-secretary of State, in winding up the debate said that the problem of nutrition in the Colonial Empire was being seriously tackled and some substantial progress could now be recorded. The West Indian inquiry was going forward, and courses of training were also being arranged in West Africa in order to promote a better understanding of food values and dietary. It was hoped that within a short time a working unit would be sent out to West Africa to study the whole district.

New Towns Bill

In moving the second reading of the New Towns Bill in the House of Lords on July 11 the Earl of LISTOWEL, Postmaster-General, recalled that the Barlow report in 1940 quoted figures showing that the infant and general death-rates were higher in the large towns of England and Scotland than in the countryside, and gave as the main reason the disadvantage of growing up and earning a living in a densely populated area. London was the classical example of urban hypertrophy. Those who had served on the L.C.C. had been painfully aware of the evil effects of congested housing, lack of open space, and long distances between homes and places of employment. But the Barlow report did not say that the drift of population into the great cities with the worst health records was an inevitable consequence of industrial advance. On the contrary, it said that what was needed for the future was a planned and controlled development of town and country which would guarantee that industrial progress would not continue to be divorced from decent living conditions for the employed population. The Minister of Town and Country Planning had now decided on the first instalment of a long-range programme for establishing new towns of a moderate size. His immediate aim was the creation of some 20 new towns which would include large extensions of existing small towns in different places in England and Wales. The population of these towns would vary from 30,000 to 60,000 and they would provide homes for just over a million people. The Government wanted to see them grow into adult and independent towns, not into garden cities or satellite towns; they must not become dormitories for workers in a neighbouring city, or a salubrious suburban settlement governed from a distant town hall. The process of democratic local government, and the fact of living together in close proximity, would create in time a sense of civic pride, and a tradition of mutual helpfulness and public service that would be handed down by parents to their children. Secondly, the supervision of an enlightened public authority should ensure a fine and spacious layout of streets and buildings, and a harmonious and distinctive architectural style. There would be no excuse, under these auspices, for drab ugliness or chaotic jumble. Thirdly, the Government wanted prosperous communities with a good average standard of life, and immunity from recurrent bouts of large-scale unemployment. This meant building up a balanced and varied economy. The corporations could do this by the deliberate use of their powers to attract the right type of industry and commercial enterprise. Finally, they wanted a community free from the occupational and income snobberies of town life today. There must be no West Ends and East Ends, no suburban villas for the professional and black-coated workers and central tenements for the factory hands: each of the neighbourhoods into which the new towns would be divided would be planned as a cross-section of every occupational and income-group in the population. This Bill represented a great social experiment, and in a sense an act of atonement for our collective wrongdoing in the past. It was the biggest and most ambitious attempt at positive planning of environment that we had ever made.

Lord WESTWOOD, Lord-in-Waiting, explained the effect of the measure in relation to the problems of Scotland, where, he said, overcrowding, congestion, and slumdom both in housing and industry were probably without parallel anywhere else in the United Kingdom. In conditions like those of the Clyde valley neither the provision of new housing nor the provision of new industrial facilities could be secured unless the density of

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development throughout the region was substantially thinned out. That conclusion was fundamental to the Clyde Valley Regional Planning Committee's report to be published towards the end of this year. The committee recommended that four new towns should be established in the Clyde valley area. The actual sites proposed were East Kilbride, Bishopton, Houston, and Cumbernauld, and the Secretary of State had already announced that he had accepted the proposal as regards East Kilbride. Plans were now being worked out for the expansion and development of the new coalfields in the East of Scotland, in Fife, and the Lothians. These would provide employment for thousands of additional miners and their families, and there was every expectation that this area would become one of the most industrially prosperous areas in Scotland. The Secretary of State for Scotland was, however, determined that the mistakes of the past would not be repeated in the future. He was looking forward to new communities providing a wide range of industrial opportunity, and not deriving their character and livelihood solely from mining.

In the debate which followed, the aims of the Bill were generally welcomed, but some doubts were expressed as to whether the creation of new towns on a large scale at the present time might not result in diverting priorities from the urgent task of rebuilding the old towns which had been so badly damaged during the war. The Bill, however, was given an unopposed second reading.

Obituary

THOMAS IZOD BENNETT

M.D. LOND., F.R.C.P.

WE have already recorded the death in London on July 10, at the age of 58, of Dr. Izod Bennett, physician to the Middlesex Hospital and the Royal National Orthopædic Hospital and senior physician to Stoke Mandeville Hospital. He was a clinical investigator of a high order, with extensive knowledge and an incisive mind. Working with biochemists and physiologists in a long series of inquiries, he continually tried to put medical treatment on a rational basis, and by powerful expression of his opinions he did much both to stimulate thought and to raise the standard of practice.

Bennett was born and brought up at Christchurch, New Zealand, but came to London as a student at Guy's. After qualifying in 1912, he held a house-appointment there; but the years 1914–18 were spent in war service, first as a regimental medical officer in France, and later as physician to a casualty-clearing station, also in the B.E.F. Returning to Guy's after the war, he became medical assistant and demonstrator in physiology, and took the M.R.C.P. In 1920, however, he moved to the Middlesex Hospital, where he was appointed assistant physician, and from 1921 to 1923 he held a Beit fellowship which enabled him to continue his first experimental work — observations on achylia and gastric and respiratory response to meals. Analysing his test-meals in the Bland-Sutton Institute, he found a fellow-student of gastric physiology in E. C. Dodds, with whom he was to collaborate during the next few years in valuable studies of gastric secretion, on the value of glucose given by mouth, and on œdema, where they had the help of J. D. Robertson. In 1925 he produced his book on *The Stomach and Alimentary Canal in Health and Disease*, a sound and timely work which revealed alike the author's physiological background and his familiarity with the work of dental, radiological, and surgical colleagues. He had clear ideas about the proper management of patients with peptic ulcer, and equally clear ideas about the inadequacy of the treatment most of them in fact received. A paper on lipoid nephrosis, written with D. T. Davies and Dodds in 1927, was followed in 1928 by the Goulstonian lectures at the Royal College of Physicians on three problems of nephritis—uræmia, œdema, and hypertension. He quoted with approval Bright's dictum that in the study of medicine we should cultivate a chastened power of generalising our ideas; he suggested that in nephritis "it is more than probable that the renal and extrarenal damage have a common cause"; and the lesson he taught was that of Sir William Gull when he said:

Elliott & Fry

"In this glass you see a large hypertrophied heart and a very contracted kidney. This specimen is classical. It was, I believe, put up under Dr. Bright's own direction and with a view to showing that the wasting of the kidney is the cause of the thickening of the heart. I cannot but look upon it with veneration, but not with conviction. I think with all deference to so great an authority that the systemic capillaries, and, had it been possible, the entire man, should have been included in this vase, together with the heart and the kidneys, and then we should have had, I believe, a truer view of the causation of the cardiac hypertrophy and of the disease of the kidney."

Though he was much more interested in some departments of medicine than in others, Bennett did in fact endeavour to look at the entire man—the patient and not merely his systems. He was at his best, perhaps, in dealing with a chronic disorder raising complex issues: he could extract the important facts, sum up plainly, and give good practical advice to both doctor and patient.

In 1934 he delivered lectures on Gee's disease at the Hôpital Claude Bernard in Paris—he was bilingual in French and English—and with Christopher Hardwick he produced in 1940 illuminating observations on "chronic jejuno-ileal insufficiency." Diabetes similarly attracted him, and he was quick to test, in 1936, with Morton Gill, the merits of protamine insulin. With the same collaborator he produced in 1939 useful evidence of the value of colloidal aluminium hydroxide as an antacid. He wrote in 1944, with Trevor Parkes, on penicillin in staphylococcal pneumonia, and for his presidential address to the medical section of the Royal Society of Medicine last year he chose the subject of hypertension. Of his more recent conjoint investigations perhaps the most important was the one begun in 1935 on cases of severe gastric and duodenal hæmorrhage admitted to the Courtauld research wards of the Middlesex Hospital. From this work Bennett, James Dow, Lee Lander, and Samson Wright emphasised in 1938 the value of estimating blood volume as a criterion of severity, and their second report, in 1942, described results of treatment.

"The outstanding point in Bennett's character," in the opinion of an old associate, "was the unpredictable nature of his outlook. He could always be guaranteed to take up some original and provoking line, and this made him a most attractive companion—though at times it could be distinctly annoying!" He was not considered an easy man to get on with, especially in later years; yet few hospital physicians have a fuller record of successful team-work. He had strong feelings, strong prejudices, and was apt to put things strongly on paper. A letter in 1924 effectively condemned *The Lancet* for encouraging the tendency to reckless abdominal operations for peptic ulcer; nevertheless Bennett was soon to be *The Lancet's* principal medical adviser, and his close relations with the editorial staff, by which the journal profited much during more than a decade, were remarkably happy.

As a physician, he was partic ularly good with patient who had no money; and if they also had a grievance against a higher authority, then he was in his element. He would take great trouble and go to great expense to help someone whom he thought had been badly treated over a pension. On the other hand, he could treat wealthy and important patients with an aloofness that caused no little embarrassment to the doctors who had sent them. A colleague who was also a patient writes:

"As a catchword spiritual healing may have its dangers, but it is a useful reminder that in times of illness the sensorimotor side of experience gives way to the deeper autonomic life of emotion—just as one little figure comes out and the other goes in on the popular Swiss weather-forecasting model. Izod Bennett was able to size up with a true insight what was wrong with his patients, and often showed a touch of genius in putting them right again; but he lacked or despised the emotional appeal, and for that reason alone his private practice remained limited, albeit to the advantage of the questing hospital practice that brought him world-wide recognition.

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But pity it was; for on the other side of the rubicon, once crossed, was a tender care and selfless devotion that made the professional relationship a thing of rare content. For better or for worse, sometimes to the point of obstinacy, his intellectual honesty dominated his life. You might almost suppose that he liked climbing the lonely Avernus."

From 1929 to 1934 he was dean of the Middlesex Hospital medical school. He had sympathy with his charges, as we see from the following characteristic passage, saying that if we contemplate

"the hours of arduous work which confront the student, the strain upon his health which is involved, and the hazards which imperil his ultimate success, the philosophy and good humour of the medical student must give rise to admiration, particularly when these are contrasted with the grumbling and discontent which seem to prevail in the junior ranks of other professions."

On the other hand he was on the whole a better educator of the graduate than the undergraduate. Those that worked with him later appreciated best his exceptional qualities. "We who owe much to his encouragement," write A. M. G. and C. H., "would like to speak of that side of his character seen especially by those who knew him well":

"These traits were his love of children, his kindness and sympathy to those who sought his advice, coupled with a generosity and wisdom which were outstanding. Few men possessed such an ability to grasp the essentials of a problem so quickly and to provide a solution which was always practical. Knowing as he did the inevitable outcome of his last illness, he nevertheless carried on his full activities, refusing to spare himself in any way. Few could have guessed how precarious was his health during the last year. This courage was typical of a man who was never afraid to defend his own opinions, however strong the opposition. At a time when the profession is beset by so many difficulties the voice of such a man can ill be spared."

Rightly or wrongly, Bennett was out of sympathy with the trend of these times. The "further steps towards slavery" have not been retraced since he wrote about some of them in these columns in 1935; and though he was a witty speaker, and could make a deep impression when he wished, in latter years his audience was apt to be out of rapport. It was something of a tragedy. At the beginning of the war he wrote: "If victory is not to be barren it must be shaped to encourage the individual rather than to produce general enslavement," and he was painting his own portrait when he spoke of the type of man who could not accept whole-time service—"whose individuality, restless energy, and imaginative vision bring not only technical knowledge but inspiration to patients and to students."

Mrs. Bennett, who survives him, is a daughter of the late N. Weiss, of the Société de l'Histoire du Protestantisme Française, in Paris.

Births, Marriages, and Deaths

BIRTHS

BELSEY.—On July 11, at Chesterfield, the wife of Mr. Ronald Belsey, F.R.C.S.—a daughter.

HANDLEY.—On July 7, in London, the wife of Mr. R. S. Handley, F.R.C.S.—a son.

KENYON.—On July 11, in Manchester, Dr. Marjorie Landau, the wife of Mr. R. H. Kenyon, F.R.I.C.—a daughter.

LATHAM.—On July 10, in Dorset, the wife of Surgeon Lieut.-Commander W. J. Latham, R.N.—a son.

LUND.—On June 20, at Hemel Hempstead, Dr. Elizabeth Lund, the wife of Mr. Max Lund, F.R.C.S.—a son.

MARRIAGES

DORNHORST—INNES.—On July 8, in London, Antony Clifford Dornhorst, M.D., M.R.C.P., to Helen Mary Innes, M.B., D.M.R.

DUGUID—BARRY.—On July 6, at Wallasey, John Duguid, M.B., major R.A.M.C., to Aileen Mary Barry, M.B.

SARGENT—SCOTT.—On July 4, Frank Sargent, M.D., M.R.C.P., D.P.M., of Reading, to Mary Margareta Scott.

STEVENS—RAWLINGS.—On July 2, in London, Albert Vivian Stevens, O.B.E., M.C., lieut.-colonel R.A.M.C., to Hilda Suzanne Rawlings.

DEATHS

BENNETT.—On July 10, in London, Thomas Izod Bennett, M.D. Lond., F.R.C.P., physician to the Middlesex Hospital and the Royal National Orthopædic Hospital, aged 58.

GOSSE.—On July 13, at St. Leonards-on-Sea, Hope Wilkes Gosse, M.B.E., M.R.C.S., formerly of Eccleshall, Staffs, aged 90.

LOUGHLIN.—On May 27, at Barton-on-Sea, Dermot Loughlin, D.S.C., M.B. Lond., late of Saxonhurst, Woolston, aged 60.

PARRY.—On July 8, at East Sheen, Evan Ithel Parry, L.R.C.P.E.

Notes and News

CHEMICAL SOCIETY'S CENTENARY

IN February, 1841, 25 men "interested in the prosecution of chemistry" met at the Society of Arts to consider "whether it be expedient to form a chemical society"; and the society, which was the first to be formed solely for the study of chemistry, came into being, under the presidency of Thomas Graham, the pioneer of colloid chemistry. Its record has been one of steady progress, the fellows increasing from the original 25 until today they now number over 6000. Offshoots have from time to time been given off, such as the Royal Institute of Chemistry, founded in 1877 to deal with the professional affairs of chemists, and the Society of Chemical Industry, formed in 1881 to cover industrial chemistry; some of these offshoots are again joined with the society in the Chemical Council. The centenary, the observation of which has been retarded by the war, will be celebrated in London in July, 1947; and the occasion receives world-wide recognition in the decision of the International Union of Pure and Applied Chemistry to hold its next international congress in London immediately afterwards.

MEDICAL SICKNESS SOCIETY

THE total funds of the Medical Sickness, Annuity, and Life Assurance Society have, in the past year, increased by £185,473 to £3,220,057. Mr. R. J. McNeill Love, the chairman, was able to report an expansion in the society's business at the annual meeting on July 16. In life assurance, new business at £270,048 exceeded by £45,208 that undertaken in 1944; claims by death and maturity amounted to over £80,000—a considerable, but anticipated, rise due to the abandonment, twenty-five years ago, of the friendly-society constitution. In the sickness fund, the premium income was £135,366, and claims paid amounted to £72,265—less than in 1944, although the amount at risk was substantially higher. Throughout the war life policies of members in the Services were generously interpreted; and payment was made on sickness policies, nominally confined to benefit within the United Kingdom, even if the member was serving overseas, when the incapacity was due to ordinary sickness or accident. The society, whose Holborn premises were destroyed by bombing, has moved from temporary offices in the country to a new permanent address at 7, Cavendish Square, London, W.1.

A NEW TYPE OF MATRON

THE Royal Victoria Hospital, Newcastle-on-Tyne, which advertised some months ago for a new type of matron,[1] has now appointed Miss Gertrude Lang-Davis, who trained at Bart's in 1923, and is technical nursing adviser to the Ministry of Labour. She is to be relieved by a catering superintendent and a housekeeper of all duties in connexion with the catering and domestic work of the hospital, and is to be free to concentrate on the nurses and their training. Moreover, she is expected to supplement her already wide experience of nursing in other countries by further travel abroad. We believe this new interpretation of a matron's duties will be rewarding not only to the hospital but to the whole nursing profession.

YOUR CUP OF TEA

THE Empire Tea Bureau, whose income is derived from a statutory levy on all teas exported from India and Ceylon, has opened at its new home, 22, Regent Street, London, W.1, a "tea centre" or exhibition illustrating the history of tea-drinking. To it M. André Simon, president of the Wine and Food Society, contributes a special display of tea-tables, complete with tea-services and cakes, showing the changes of style and fashion through the centuries.

JOURNAL OF TROPICAL MEDICINE

NEXT year the *Journal of Tropical Medicine and Hygiene*, which has been published bi-monthly during the war, will once again be a monthly. Dr. Harold Avery, who took over the editorship from Dr. Aldo Castellani in 1940 and has ably guided the journal throughout the war years, is now retiring, owing to pressure of other work, and is being succeeded by Dr. L. Everard Napier, C.I.E., F.R.C.P., who has returned home after nearly 30 years in the tropics, where he edited the *Indian Medical Gazette* and was director of the Calcutta School of Tropical Medicine. The annual subscription from January, 1947, will be 35*s.*; the editorial office remains at Staples House, Cavendish Place, London, W.1.

1. See *Lancet*, 1946, i, 99.

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University of Glasgow

The following degrees were conferred on July 10:

M.D.—James Reid (with honours); Margaret D. Giles (with commendation); D. M. Armstrong and James Macrae.

M.B., Ch.B.—G. C. Provan, J. F. Patterson, Elizabeth M. Dallow, John Guthrie, D. W. Menzies, J. B. Ritchie, R. W. L. Heddle, Susanne Rosenfeld, W. D. H. Conacher, Harold Stern (with commendation); George Adam, L. R. C. Agnew, C. M. Ball, G. N. Beck, W. G. A. Begg, Harold Benson, Ruth K. Bowden, Agnes C. L. Bowie, William Brodie, R. C. Brown, I. A. Buchanan, John Burgoyne, Janet G. M. Burnett, J. H. Cameron, F. W. Campbell, G. S. Carrick, James Carswell, Liam Casey, Nulece Cassells, Herbert Clark, Ruth A. Cohen, D. F. Coulter, Mary G. Coyle, A. J. Crowe, Helen M. Cunningham, Agnes C. Davidson, Andrew Deuchars, W. W. Douglas, Thomas Dungavel, A. M. Ferrie, G. H. Field, R. B. Forbes, R. R. H. Ford, W. S. Foulds, K. H. Fraser, William Garrett, J. B. Gibson, J. M. Gilmour, Agnes M. Gordon, Elsie R. Gordon, Catriona M. Gourlay, E. G. Green, Kenneth Greig, Anne M. Haddow, Samuel Happel, Ian Harper, Isabella P. Harvie, R. W. Henderson, R. B. Hendry, M. M. Herbert, P. A. Hood, J. R. S. Hutchison, R. M. Inglis, J. G. Kennedy, J. S. P. Kerr, Ruth A. Keymer, Margaret G. Kirkwood, William Lees, E. C. Levine, Jack Levy, Janet J. Logan, Thomas Logan, C. P. Lowther, Alexander McClelland, Sarah C. McEwan, A. J. Maciver, Samuel McKechnie, W. J. M. Mackenzie, N. A. MacKillop, J. M. McKinnon, John Mackintosh, D. A. McLaren, G. K. McLellan, J. F. McMinn, Anna S. MacTavish, A. S. MacVicar, J. S. Marshall, Robert Martin, Dorothy J. Miller, J. R. Milne, Mary A. Mullen, I. B. Munro, J. M. Neilson, Albert Poli, J. A. E. Primrose, Hugh Revill, H. A. N. Richmond, J. L. Robertson, J. S. Scott, W. J. C. Scott, William Seright, Margaret R. S. Smellie, Margaret A. E. Smith, Mary D. Smith, Marjory B. Snodgrass, J. T. T. Stark, Elizabeth T. Steel, I. F. Stewart, R. G. Stewart, Jack Stoll, Norval Watson, Anne B. Watt, John White, Edith J. Whitelaw, Louis Whyte, Thomas Wilson, B. A. Woodger, J. T. Young, and T. G. S. Young. The Brunton memorial prize and the Stockman medal were awarded to G. C. Provan; the West of Scotland R.A.M.C. memorial prize and the John W. Weir prize to Elizabeth M. Dallow: and the Macewen medal in surgery to R. W. L. Heddle.

Royal College of Surgeons of England

At a meeting of the council on July 11, Sir Alfred Webb-Johnson was elected president for the sixth year. Sir Heneage Ogilvie and Sir Cecil Wakeley were elected vice-presidents.

Leverhulme research scholarships were awarded to Mr. B. W. Rycroft (Surgery of Corneal Grafts) and Mr. David Barker (Recovery of Proprioceptor Function after Nerve Injury). The seventeenth Macloghlin scholarship was awarded to J. P. H. Davies of Lewes County School.

The following were elected for the ensuing year: *Hunterian professors:* Mr. Guy Blackburn, thoraco-abdominal wounds in modern war; Mr. R. H. Franklin, congenital atresia of the œsophagus; Mr. H. A. Haxton, regeneration after sympathectomy and its effects in Raynaud's disease; Mr. John Howkins, movement of the diaphragm after operation; Mr. Harvey Jackson, association between certain anatomical facts and the symptomatology of intervertebral disk protrusions in the lumbar region; Mr. J. B. Macalpine, (1) growths of the renal pelvis and ureter, and (2) bladder growths with special reference to growths occurring in workers in aniline dyes; Mr. Joseph Minton, occupational eye diseases and injuries; Mr. R. W. Nevin, surgical aspects of intestinal amœbiasis; Mr. H. W. Rodgers, postoperative course of gunshot wounds of the abdomen; Mr. E. R. Smith, intestinal decompression in the treatment of acute obstructions; and Mr. F. G. S. Strange, place of plastic procedures in the preparation of amputation stumps for limb fitting. *Arris and Gale lecturers:* Prof. Lambert Rogers, ligature of arteries with particular reference to carotid occlusion and the circle of Willis; and Mr. F. F. Rundle, anatomy of exophthalmos. *Erasmus Wilson demonstrators:* Mr. J. T. Chesterman, Mr. V. Zachary Cope, Dr. L. W. Proger, and Mr. R. W. Raven.

A diploma of fellowship was granted to J. R. M. Miller, and diplomas of membership to E. I. Bieber and Janet Sutherland.

Diplomas in Tropical Medicine and Hygiene were granted jointly with the Royal College of Physicians to the candidates named on June 29 (p. 987), and to E. A. Lumley. The following diplomas were also granted jointly with the Royal College of Physicians:

D.P.M.—W. V. Bremner, J. C. D. Carothers, G. S. Clouston, J. P. Dewsbery, L. A. Finiefs, Joan Fitzherbert, Max Hamilton, W. L. Hardman, H. B. N. Jennings, James Milne, E. W. Rees, A. P. Russell, Myre Sim, E. D. Taylor, Wilfrid Warren, R. L. Whitman, and H. G. Williams.

D.L.O.—Ronald Barraclough, J. C. Delap, H. D. Fairman, Sidney Gnessen, Kenneth Harrison, L. H. Hiranandani, T. B. Hutton, P. H. Jobson, R. S. McCrea, J. F. O. Mitchell, E. N. Owen, T. A. Quilliam, H. D. Raffan, Courteney Remington-Hobbs, J. A. Seymour-Jones, H. M. Urquhart, and L. E. Wood.

Dr. W. J. B. Burke, professor of medicine at the University of Santo Tomas, whose death in Manila was reported last year in these columns and in the lay press, is now known to be alive and well. His present address is: c/o Chartered Bank of India, Australia, and China, Manila.

On Active Service

AWARDS

M.C.

Captain DENYS RHYS EVANS, M.R.C.S., R.A.M.C.

In the list published on June 29 (p. 984) this officer was incorrectly described as Captain D. R. Evans, M.B. Edin.

MENTIONED IN DESPATCHES

Surgeon Lieut. A. W. DAWSON-GROVE, R.N.V.R.

Medical Diary

JULY 21–27

Thursday, 25th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2

5 P.M. Mr. W. D. Coltart: Injuries of the Astragalus. (Hunterian lecture.)

Appointments

AGNEW, R. W., M.B. Glasg., M.CH.ORTH. Lpool, F.R.C.S.E.: orthopædist, Blackburn Royal Infirmary, Blackburn public health dept., and Accrington Victoria Hospital.

BEHRMAN, SIMON, M.R.C.P.: neurologist, Queen Mary's Hospital for the East End, E.15.

COOPER, H. A., M.D. Lond., M.R.C.P: senior physician, Runwell Hospital, Essex.

COUPER, E. C. R., M.D. Glasg., F.R.F.P.S., D.P.H.: medical superintendent, Sharoe Green Hospital, Preston, and M.O., Preston Institution.

ELLIOTT, F. A., M.B. Cape Town, M.R.C.P.: asst. physician, Charing Cross Hospital.

HERRING, RUSSELL, M.R.C.S.: pathologist, Salford Royal Hospital.

KIMBELL, C. W., M.B. N.Z., F.R.C.S.E., M.R.C.O.G.: asst. gynæcologist, Prince of Wales's General Hospital, N.15.

ROSE, W. G., M.B. Lond., F.R.C.S.: honorary surgeon, Derbyshire Hospital for Sick Children.

TOD, W. H., M.D. Leeds, M.R.C.O.G.: consulting obstetrician and gynæcologist, Preston.

Ancoats Hospital, Manchester:

HOWAT, H. T., M.B. St. And., M.R.C.P.: asst. physician.

JELLY, G. O., B.M. Oxfd, F.R.C.S.: general surgeon.

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NUTRITION IN SOUTH AFRICA.—In a letter to the *Times* of July 13, Dr. E. H. Cluver points out that two misconceptions have arisen in reports of his paper at the Royal Society Empire Scientific Conference (see *Lancet*, July 13, p. 57, second column, line 24). The figure 11,000,000 referred to the whole of the Union's population; there are only some 7,000,000 Africans. And even if the Africans could be induced to adopt a better balanced diet, it would not necessarily follow that the mines could recruit more labour locally, because many other avenues—particularly farming and the new secondary industries—are open to Union Africans.

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EFFECTS OF USE AND DISUSE ON NERVE AND MUSCLE *

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THE fact that the structure of the fabric of the body is modified by use is so familiar that we perhaps do not sufficiently often pause to consider how amazing it is. The self-preserving actions of the body are surprising enough in themselves, how much more so the fact that the living system is one in which each part increases or decreases in size according to the demands placed on it.

The facts of atrophy and hypertrophy have obtruded themselves throughout recent work on the regeneration of nerve and muscle, and we should like to know more of this subject if only to satisfy our intellectual curiosity. But there is another almost equally compelling reason for studying it—the great practical importance for the maintenance of the health of the body of those agents and actions which promote its growth and development. For the treatment of many disorders, as well as for the positive promotion of health, it is of first importance to have all the information possible on the effects of increased or decreased use of organs. There must be many who have regretted our ignorance of these effects as they condemned a joint to a fixed position in plaster, or examined a shrunken and rigid limb produced by weeks of fixation.

It is conventional to say that the early outlines of the body are moulded by heredity and the later details added by what W. Roux called functional differentiation. I have considerable doubts of the validity of this distinction. The influences of heredity and of function operate at both early and late stages. Indeed, they are not nearly so widely separate as might appear.

The essence of reproduction is the existence of a system which tends to build more like itself. By the terms function and use we mean activities of the parts which tend to preserve the whole. The fact of functional hypertrophy, the building of extra material into the system as a result of use, emphasises that reproduction does not stop with what is conventionally regarded as the end of development but continues throughout life. Since the activities of self-maintenance tend also to increase the amount of that which is maintained, it appears that heredity, growth, and functioning cannot be separated from each other.

These logical puzzles are instructive enough if we ponder them, but it is more important for us as scientists and clinicians to ask whether we understand the conditions under which hypertrophy and atrophy occur: the physiology of use and disuse. There have been some brave attempts by embryologists, but it would not be a great exaggeration to say that the subject has hardly been explored. And yet probably every one of our tissues —blood-vessels, muscles, bones, ligaments, skin, glands, and even as I hope to show nerves and brain—is continually being modified day by day through the use we make of them. Here is a vast field for research.

In considering the effects of use and disuse on muscle and nerve we should bear in mind that between receptors and effectors—sense organs, say, and muscles—there is a chain of tissues, afferent nerves, central pathway and cells, efferent nerves, and muscles. If we examine the circumstances in which each link in the chain undergoes hypertrophy or atrophy we shall, I hope, reach a useful generalisation about the conditions under which these processes occur.

* Sydney Ringer Memorial Lecture, delivered on March 12, 1946, at the University College Hospital Medical School.

PERIPHERAL NERVE TRUNKS

The change which one might at first regard as an atrophy is wallerian degeneration. Closer examination will show, however, that the degeneration of a portion of nerve-fibre severed from its nerve-cell body is not an atrophy *ex non usu* of the type that I wish to consider, it is the break-up of a balanced system whose physical integrity has been disrupted. However during the last two years evidence has appeared that use and disuse have large effects on peripheral nerve-fibres.

Influence of Peripheral Connexions.—The fibres in nerve trunks range in size from the large ones with a diameter up to 20μ or more, which are either motor fibres or connected with the annulospiral endings of the muscle spindles, through smaller sensory and motor fibres, down to the non-medullated sensory and post-ganglionic motor fibres. For each function there are fibres of an appropriate diameter. What determines the size of each fibre? The evidence now suggests that it is not some hereditary influence alone which does this but the connexions and activities of the fibres themselves. The peroneal nerve of the rabbit divides at the knee into motor branches to the anterior tibial and peroneal muscles and the purely cutaneous anterior tibial nerve. The motor branches contain many large and some small nerve-fibres; the cutaneous nerve has only medium-sized and small fibres. Now, if the main nerve trunk is severed high up in the thigh and the ends are reunited, the fibres originally connected with each part are bound to become mixed; for numerous fibres grow out from each central fibre, and there is no special attractive force which directs each back into its old channel. Yet, in spite of this mixing, after regeneration has continued for, say, a year, Sanders and Young (1944) found that the motor bundles contained larger nerve-fibres than did the cutaneous bundles.

This by itself suggests that the size of a regenerated fibre is not controlled by its cell of origin, unless we postulate that only those fibres which make correct connexions remain, while the rest atrophy. At first we were inclined to think that the determining factor was the size of the tube left in the peripheral stump of a nerve after degeneration. This tube, if small, may indeed have a restricting effect, but further investigation showed that the main influence was to be found more distally.

In this further work (Sanders and Young 1945) we interrupted the fibres of the common peroneal trunk high up in the thigh by crushing with smooth-tipped forceps. This operation produces wallerian degeneration but, if done carefully, leaves the main connective-tissue framework of the nerve intact. The new fibres which grow out from the central stumps are thus led back into their old pathways. Besides this crushing we severed the same peroneal nerves very low down at the knee, where they have already divided into motor and cutaneous branches. On one side of the animal we joined the ends again after severance, thus allowing the fibres to return to the muscles and skin. On the other side the stumps were so arranged that this could not happen, and the fibres, after traversing the region below the crush, were forced to end blindly in a neuroma.

The animals were killed 200 days after these operations, and the portions of the nerves between the crushed and cut regions were examined. Where union with the periphery had been allowed, large fibres had formed in the motor bundles and medium ones in the cutaneous bundles. But in the nerves which had regenerated below the crush, but had not been allowed to reach the periphery, the fibres were much more numerous, and all were small. Evidently what had happened was that, after the crush, numerous fibres had grown out from each central fibre down the tubes of the main peroneal trunk. When union with the periphery was allowed, some of these fibres matured and became large, while the superfluous ones

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disappeared altogether, thus producing nerves with a few large fibres. In the absence of any periphery the fibres remain almost equally small in both cutaneous and motor bundles. Here we have both hypertrophy and atrophy—hypertrophy of the fibres which become used, and atrophy of the superfluous ones in the same nerve. The totally useless nerves retained many small fibres.

The influence which determines the size of a nerve-fibre during regeneration is not therefore mainly the size of the tube in which it runs but the peripheral organ with which it makes connexion. Here we have a very striking example of the influence of the next most peripheral link in the reflex chain backwards upon the nerve. It may be that this influence is very potent in normal development in determining the size reached not only by nerve-fibres but also by the nerve-cells. Early in development all the neuroblasts are similar in size and the first outgrowing fibres are all small. It seems likely that the size which each fibre and cell ultimately reaches is determined by its peripheral connexion.

All sorts of questions about such an influence come to one's mind. The matter is not at all simple, since the relation between size and efficiency of nerve-fibres is obviously not a direct one. For some functions large rapidly conducting fibres, producing synchronous volleys of impulses, may be less efficient than small fibres in which the slow conduction leads to asynchronous arrival at the end-organ. It is not necessarily a case of "the bigger the better." We are now doing experiments to carry the analysis further and have found, for instance, that motor nerve-fibres become large on contact with any muscle and not merely their own muscle tissue. It is not therefore clear that effective functioning is necessary to allow the fibres to increase. But much further work must be done to determine how nervous tissue is influenced by its peripheral contacts.

Peripheral connexion of some sort is therefore necessary for the hypertrophy of peripheral nerve-fibres, and the reverse is also true: fibres which lose their peripheral connexions undergo considerable atrophy. Greenman (1913) showed that at certain stages of regeneration the fibres of the *central* stump of a severed nerve became smaller. This important finding has recently been confirmed by Weiss and his colleagues (1945) in America and by Gutmann and Sanders (1943) at Oxford. Gutmann and Sanders have found that, after severance and suture of a nerve, the central fibres decrease in diameter for about 100 days and then increase again, returning to normal after about 300 days. More recently, Sanders and Young (1946) have found that, if no connexion with the periphery is allowed, the secondary rise does not take place, and the fibres continue to shrink, becoming bizarre structures with very thin axon and thick myelin.

This brings us to a question which has often interested the neuropathologists—the disappearance of nerve-cells after severance of their nerve-fibres. It has long been known that there is a reduction in size of the ventral horn in the spinal cord at long periods after amputation of a limb. Retrograde degeneration of nerve-cells without a periphery may, in fact, extend to their complete disappearance. An interesting problem is how far this degeneration proceeds centrally. It may be that the Betz cells of the cerebral cortex are affected by the disappearance of the ventral horn-cells with which they were connected. It would be especially interesting to study such wider repercussions of atrophy and hypertrophy during the period of development.

Influence of Central Connexions.—There is evidence, then, that the tissues of the nervous system, both fibres and cells, hypertrophy under the influence of contact with the periphery but undergo atrophy if deprived of such connexions. But atrophy may take place under quite different conditions—namely, if the cells do not receive stimulation from above, a process known as transynaptic or transneuronal degeneration. After lesions in the retina the corresponding cells of the lateral geniculate body disappear, and there are indications that similar phenomena may be widespread in the central nervous system. However, it is certainly not true that any nerve-cell isolated from its normal source of stimulation rapidly disappears. The cells of the sympathetic ganglia, for instance, are known to persist when their preganglionic fibres have been cut. It would, however, be interesting to study such isolated ganglia in more detail to discover whether there is any reduction in the size or number of their cells.

Such tissues isolated from their central connexions show many changes, among which I may mention one which will throw some light on our general problem. They rapidly become hyperexcitable to mechanical and certain chemical stimuli. This applies to isolated nerve-cells of various types and to smooth and striped muscle-cells which have been denervated. The chemical sensitivity is especially pronounced to acetylcholine where this substance is normally the transmitter of impulses to the tissue. Denervated tissues are therefore usually not inactive but in a state of constant uncoördinated activity.

A brief analysis of hypertrophy and atrophy of nervous tissue has, then, shown that atrophy may take place in the absence of connexion with either the next higher or the next lower link in the normal chain of stimulus and response. Hypertrophy certainly takes place after connexion with a lower link, but no evidence has been presented that it can be induced by connexion from above, and no-one seems to have investigated this matter, though there are indications that it plays a part during the development of the nervous system.

MUSCLE-FIBRES

Connexions between Nerve and Muscle.—At this point we may examine some details of the connexion between nerve-fibres and muscle-fibres which are not only relevant to our subject but will also serve to recall certain aspects of the work of Sydney Ringer. He spent much of his time in analysing the content in inorganic ions of the body fluids and tissues and showed that a balance of ions similar to that which normally bathes the cells is necessary to maintain their life in vitro. Indeed in doing this work, which led to the invention of Ringer's solution, he came as near as almost anyone can to providing immortality for his name and fame. Consideration of the ionic content of the tissue fluids will go far towards helping us to obtain a clear picture of the nature of the relationship between nerve and muscle, a synaptic relationship similar to that between nerve and nerve. There has long been a controversy about whether the nervous units are continuous with each other or merely contiguous. If, as some have maintained, all the tissues are continuous, there is little sense in recognising separate links and all of the problems discussed above take on a new aspect. Ringer discovered that the fluid between the tissues was rich in sodium and chloride but contained little potassium ion. For this reason the minute channels round the cells in a muscle may be collectively referred to as the sodium space of the muscle. Within the cells, however, there is very little of either sodium or chloride, but there is much potassium, and this portion of the muscle may be called its potassium space. There is every reason to think that the maintenance of this ionic difference, by the activities of the cell and the nature of its surface, is of central importance for functioning and in particular for the propagation of action potentials in both nerve-fibres and muscle-fibres.

What, now, are the possible relations of a nerve-fibre with a muscle-fibre at the end-plate? Clearly, full continuity implies that the potassium spaces of the nerve and muscle are continuous, with no intervening membrane (see figure). It would be difficult for a histologist today

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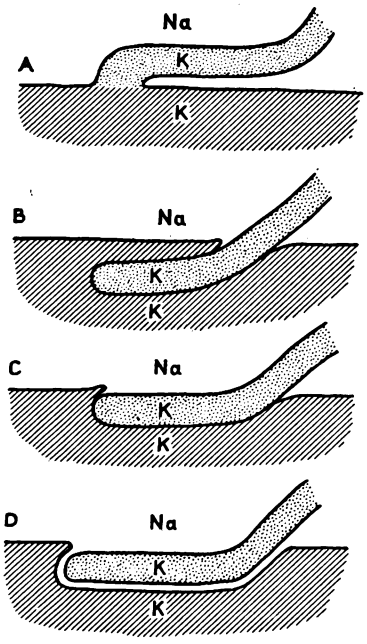
to maintain that this is the situation. Where nerve and muscle meet, there is abundant evidence that the substances of the two are held apart. They usually stain so differently that there can be seen to be a clear boundary between the two, which we may take to imply the presence of one or more limiting layers or membranes (Gutmann and Young 1944).

But, even if there is a separation, there are still various possibilities. The nerve and muscle may each have membranes continuous over their surfaces and with a portion of the sodium space separating the two; or the two membranes, still complete, may be in contact, with no intervening space. Finally, there may be, in some sense, a fusion of the two membranes to make one. It should be possible to decide between these alternatives by histological means, though I am not at present prepared to be dogmatic about it. The incoming nerve-fibre lies in a trough in the protoplasm of the sole-plate of the muscle-fibre, with a narrow clear space often visible round it. This suggests that either alternative C or D (see figure) is true. In a lateral view one can often see a separation between nerve and muscle, suggesting D; but it must be remembered that such material has been not only fixed and stained but also deprived of the water which makes up at least 70% of its substance; hence shrinkage would be expected, and no great reliance can be placed on small spaces seen in such preparations.

Denervation Atrophy.—In any case there is a sharp boundary between the nervous and muscular tissue; and, if we divide the nerve, the acute degeneration of the nerve-fibre stops at the endings in the muscle. The end-plate does not, as is often stated, disappear (Gutmann and Young 1944). Nevertheless such a denervated muscle undergoes a rapid and dramatic atrophy. Within a few days the muscle-fibres begin to shrink and the connective tissue between them to increase. This process goes on at different rates in different muscles and in different animals, but it leads within a few weeks to a reduction of the total volume of the muscle to less than a half, and of the muscle-fibres by much more than this. The nuclei leave their position at the margin of the fibres to form rows at the centre, and finally, after months or years, the whole muscle-cell splits up either by longitudinal fission into short spindle-shaped fragments or by rounding up into spherical or ovoid sections (Gutmann and Young 1944). Well-marked chemical changes accompany this process of atrophy, especially a fall in the glycogen and phosphocreatine content, but these changes might be expected to accompany loss of muscle substance. So far knowledge about them has added little to our understanding of the process of atrophy. The contraction which the muscle gives when electrically stimulated is much prolonged after denervation, but again we have little evidence of the significance of this.



Conceivable relations of nerve and muscle at an end-plate: A, complete continuity of axoplasm and sarcoplasm; B, nerve-fibre penetrates muscle membrane and runs within sarcoplasm; C, nerve indents sarcoplasm, and membranes of nerve and muscle fuse; D, nerve indents sarcoplasm, and membranes of nerve and muscle remain distinct, leaving a Na space all round nerve. Actual relations are either C or D. (Gutmann and Young 1944.)

Deprivation of a muscle of stimulation from above therefore leads to shrinkage and, finally, disappearance of its fibres. But there is another way in which atrophy can be produced. The next link downwards in the chain of reflex action is the resistance which the muscle meets by acting against other muscles, or the hard outside world. Deprive a muscle of this resistance and it will waste almost as fast as if denervated. An easy way to do this is to cut its tendon: after section of the tendo Achillis the gastrocnemius of the rabbit becomes reduced in weight by a half in three weeks. Immobilisation by splinting or plaster is nearly as effective in producing atrophy of a muscle which is held relaxed. Muscles held moderately stretched during splinting, on the other hand, do not atrophy and may even hypertrophy, though overstretching is a potent source of damage to muscle.

The theories of the causes and nature of muscular atrophy are numerous, but none is conclusive. It has already been mentioned that the denervated tissue is hyperexcitable and its fibres go into that continuous ineffective flickering contraction which is known as fibrillation. Many have suggested that it is this activity which causes the wasting, that atrophy is a result of overactivity rather than underactivity—overactivity in the absence of the usual vascular responses of the muscle. But there is much to show that fibrillation is not the cause of atrophy. Quinidine, which prevents fibrillation, does not arrest the wasting (Solandt and Magladery 1940).

There are means, however, by which denervation atrophy can be reduced if not entirely prevented. John Reid, of Edinburgh, 100 years ago described the beneficial effects of galvanic treatment of denervated muscles, and this has recently been confirmed. Gutmann and Guttmann (1942), Hines et al. (1943), Eccles (1944), and Solandt et al. (1943) have found in animals that electrical exercise maintains the volume of denervated muscles. We do not know how this effect is achieved, but we may notice that the treatment is in effect restoring to the muscle something of its normal action. This may seem a trite piece of teleology, but it is suggestive that when the muscle-fibres are made to contract, as they normally are by stimulus from outside themselves, they waste little if at all. The atrophy of muscles in splinted limbs may similarly be at least partly prevented by encouraging strong voluntary contractions daily, if this can be arranged.

We may expect further enlightenment from the study of the way in which various conditions of tension influence the extent to which atrophy is prevented when denervated muscles are thus made to contract. Strangely enough, this factor has until recently been largely neglected in most of the studies. The work of Eccles (1944) suggests that denervated muscles waste least if allowed to shorten during electrical stimulation. Wehrmacher et al. (1945) found the greatest effect when the muscles were subjected to the maximal stretch and restrained by weights so as to prevent shortening. It seems probable that the optimal conditions for the maintenance of muscle-fibres is that they contract against resistance and, if allowed to shorten, are then again stretched. In fact, it seems that the atrophy of the denervated muscle is connected with the fact that it is not made to do its proper work.

Hypertrophy of Muscle.—This can of course be produced by reinnervation of a denervated muscle. The time of arrival of new nerve-fibres at a muscle after nerve suture can now be calculated accurately. If the muscle has not been left for long without nerve-fibres, the power of contraction reappears and the volume of the muscle begins to increase within a few days of the return of the nerve-fibres to the old end-plates. The

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original pattern of innervation may then be fully restored. But in muscles left for a long time without nerves the old connexions between the nerve and muscle become broken or closed by the development of fibrous tissue, so that the new nerve-fibres cannot enter into the old end-plates; instead they pass along between the muscle-fibres (Gutmann and Young 1944). If they then eventually make contact with the sarcoplasm new end-plates are formed, of unusual form but apparently effective in inducing contraction and increase of volume of the muscle-fibres. It is striking to see how even a very wasted muscle may recover in volume and produce strong actions. But the further the atrophy has gone the slower and less complete will be the recovery, and muscle-fibres which have broken up can probably never again differentiate. This is one of the main reasons for urging that performance of nerve suture be not delayed longer than is absolutely necessary after nerve injury. In the past it has been common to leave injured nerves for long periods in the hope of a spontaneous recovery. But every month of delay decreases the probability of a good eventual recovery, and it is therefore obviously of great importance to obtain as much information as possible about the rate of regeneration so as to estimate accurately the date at which recovery may be expected and, if it does not take place, to allow operation and union of the nerve stumps.

We must be careful not to refer the hypertrophy which follows reinnervation too definitely to the restoration of the muscle to use by the animal. Muscles recover their volume when innervated by nerves which do not normally control them, even by the nerves of the antagonistic muscles. In these circumstances the very careful work of Sperry (1942) has shown that there is no re-education of the central neurons to allow effective use to be made of muscle. Presumably, in so far as it contracts at all, such a hetero-innervated muscle does so ineffectively, but it may meet resistance. Yet its volume increases, though not so fast or far as a muscle with its own innervation. Evidently the mere presence of nerve-fibres stimulates growth of a muscle (as any muscle stimulates any nerve). Further work is needed to decide the extent of such direct effects of mere contact between nerve and muscle as distinct from those of the activity produced by the connexion. Immobilisation of any region by transection of the spinal cord and section of the posterior roots is followed by an atrophy of the same order of severity as that produced by denervation, which suggests once again that inactivity is the main if not the whole cause of the atrophy.

In fact the importance of activity of the muscle continually obtrudes throughout these studies, though it has only recently become a main preoccupation of the experimenters. We have already seen that it is probable that active contraction against resistance will prevent the atrophy of denervation. Now Hines (1942) has shown that the recovery of a muscle during reinnervation is much reduced if the limb is immobilised. It would be difficult with present knowledge to assert that activity is the only factor in the hypertrophy of reinnervation, but it is certainly a very large one; within limits, the more use is made of the muscles through their nerves, the larger do they become.

This brings us to the problems of hypertrophy and exercise. We are all familiar with the development of the muscles with use, but there is a surprising lack of information about the conditions under which it takes place. The hypertrophy does not consist in an increase in the number of muscle-fibres but in the volume of those already there. The smaller muscle-fibres constitute, as it were, a reserve able to provide an increase when the muscle is exercised. The hypertrophy is no doubt related to the increase of blood-supply which accompanies increased activity, but the general conclusion which emerges is that muscles waste when they are deprived of stimulation from above or of resistance from below, and in this double dependence they show a remarkable parallel with nervous tissue.

SENSE ORGANS

Specialised receptor cells atrophy and may disappear if isolated from the central nervous system by section of their nerves. As in the case of muscle-cells, the disappearance is not always rapid, but it has been stated to happen in various situations, such as taste-buds, lateral-line organs of fishes, muscle spindles, and Merckel's corpuscles of the skin. Conversely, reinnervation of a degenerated piece of skin is said to lead to the redevelopment of the atrophic sense organs within it and to the addition of new ones. Sense organs therefore undoubtedly may undergo atrophy if deprived of connexion with the next link down the chain of reflex stimulation.

The link which precedes the sense organs in that chain is the stimulus arriving from the outside world. Studies on the effect of absence of outside stimulation on sense organs are not numerous, but they are sufficient to indicate that a process comparable to atrophy may take place, for instance, in the eyes or in the skin, if these are isolated by appropriate means from external changes. The subject would well repay further investigation, especially of the influence of various external environments during development. Though our information about sense organs is very incomplete, it justifies the statement that they too depend for their continued existence both on activation from above and on the possibility of transmitting downwards to the rest of the body.

THE PRINCIPLE OF DOUBLE DEPENDENCE

My survey of the factors making for atrophy or hypertrophy of the sections of the neuromuscular system is now complete, and I hope that it shows a general principle. The tissues concerned are all triggered systems, having the power of acting in a certain way for the good of the body as a whole. The continued existence of each of the tissues is ensured by a system of double dependence. They must receive some stimulus or constraint from above, and they must exercise some stimulating effect or be able to produce some constraint below. Thus a nerve-fibre deprived of connexion either with its periphery or with its centre fades and may disappear. Muscle receives its stimulation from nerve and exercises constraint against other muscles or outside forces. It will atrophy if given too little direction from above, as after total denervation or isolation of lower from upper neurons; it will also atrophy if it is left relaxed and therefore cannot contract against resistance. Conversely, hypertrophy arises when a muscle is worked harder either from above by the nervous system or from below by meeting increased resistance. The development of any of these organs also depends on its blood-supply, and I might add this as a third factor and say that the tissues show a triple dependence; but the supply of raw materials is so universally a necessity for living tissues that I prefer not to include it with the other two special conditions on which atrophy or hypertrophy depend.

This principle of double dependence may seem pretentious, teleological, and without practical value, but it can be defended against all three counts. It accurately describes the facts and therefore makes no unjustifiable pretences. This does not mean that it describes all possible information about atrophy and hypertrophy. I should be the first to agree that we need further physiological analysis of the changes in the metabolism, and so on, which are involved. But such studies will not alter the fact that hypertrophy arises when tissues are able so to act as to assist the life of the body, and that they atrophy if they cannot be of further use. I can see no objection to organising our ideas on the subject round this fact; it might be called a truism were it not so widely neglected. And to the charge that the statement

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of the double dependence of tissues is of no practical value it can be replied that it may be of service to many in arranging their knowledge so as to be better able to treat their patients. For it will continually remind us of the circumstances in which atrophy and hypertrophy may take place, and may even suggest means by which a tissue, in danger of wasting because deprived of dependence on one side, may be maintained by increased stimulation from the other direction.

However, the last thing I wish to suggest is that our knowledge on this subject is yet satisfactory. Indeed, I felt that the most appropriate memorial to Sydney Ringer was to use this occasion to call attention to a subject about which our information is incomplete. There is still plenty to do in analysing the conditions which produce increase or decrease of parts of the body during development and in adult life. It may be that we shall find that we can organise our search for knowledge of the subject round the thesis that each tissue tends to produce more like itself, provided that it has suitable raw materials, when it comes under a system of double constraint—namely, when it is stimulated from outside and can produce effects of value to the body as a whole.

REFERENCES

Eccles, J. C. (1944) *J. Physiol.* **103**, 253.
Greenman, M. J. (1913) *J. comp. Neurol.* **23**, 479.
Gutmann, E., Guttmann, L. (1942) *Lancet*, i, 169.
— Sanders, F. K. (1943) *J. Physiol.* **101**, 489.
— Young, J. Z. (1944) *J. Anat.* **78**, 15.
Hines, H. M. (1942) *J. Amer. med. Ass.* **120**, 515.
— Thomson, J. D., Lazere, B. (1943) *Arch. phys. Ther.* **24**, 69.
Sanders, F. K., Young, J. Z. (1944) *J. Physiol.* **103**, 119.
— — (1945) *Nature, Lond.* **155**, 237.
— — (1946) *J. exp. Biol.* (in the press).
Solandt, D. Y., Magladery, J. W. (1940) *Brain*, **63**, 255.
— de Lury, D. B., Hunter, J. (1943) *Arch. Neurol. Psychiat.* **49**, 802.
Sperry, R. W. (1942) *J. comp. Neurol.* **76**, 283.
Wehrmacher, W. H., Thomson, J. D., Hines, H. M. (1945) *Arch. phys. Med.* **26**, 261.
Weiss, P., Edds, M. V., Cavanaugh, M. (1945) *Anat. Rec.* **92**, 215.

PENICILLIN SENSITIVITY OF BACT. TYPHOSUM

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SIXTY-SIX different strains of *Bact. typhosum* were tested in tubes containing falling dilutions of penicillin in nutrient broth. The tubes were inoculated from broth cultures 24 hours old with a standard 2 mm. platinum loop. Readings were made after 24 hours' incubation.

With one exception all strains were completely inhibited by 25 units of penicillin per c.cm.; sixty-three by 20 units per c.cm.; and 15 units per c.cm. was sufficient to inhibit completely the growth of fifty strains of the organism as judged by absence of turbidity in broth. Thirty-six of the strains were totally inhibited by 10 units of penicillin per c.cm. The lowest concentration of penicillin used—2·5 units per c.cm.—did not completely inhibit any of the test organisms, but retarded growth in twenty-eight strains.

For the purpose of demonstration a strain of *Bact. typhosum* was plated out on a buffered medium, and its sensitivity tested by the assay cylinder method [1] with porcelain cups 8 mm. in diameter. The zones of inhibition obtained round the cups containing penicillin in increasing concentrations were 0, 9·0, 12·0, 14·5, 16·5, and 19·0 mm., corresponding to concentrations of 5, 10, 20, 80, 160, and 320 units of penicillin per c.cm.

1. Abraham, E. P., Chain, E., Fletcher, C. M., Gardner, A. D., Heatley, N. G., Jennings, M. A., Florey, H. W. *Lancet*, 1941, ii, 177.

TABLE I—ANTIBIOTIC EFFECT OF PENICILLIN ON *Bact. typhosum* IN MICE

Test animal	Dose of penicillin per injection (units)	No. of injections	Result or interval from inoculation to death
A	50	1	20 hr. 30 min.
B	100	1	Recovered
C	200	1	31 hr. 50 min.
D	400	1	47 hr. 30 min.
E	800	1	39 hr. 00 min.
F	50	3	Recovered
G	100	3	15 hr. 30 min.
H	200	3	21 hr. 30 min.
I	400	3	31 hr. 30 min.
J	800	3	Recovered
K	50	6	Recovered
L	100	6	Recovered
M	200	6	Recovered
N	400	6	50 hr. 30 min.
O	50	8	Recovered
P	100	8	Recovered
Q	200	8	Recovered
R	400	8	Recovered
S	800	8	19 hr. 30 min.

14 control animals: 12 died in 14–33½ hr., and 2 recovered.

The results described suggest that the rate of growth of *Bact. typhosum* is retarded by penicillin. Unfortunately no suitable animal is known for the experimental study of typhoid fever in the laboratory. Mice are easily killed by the intraperitoneal inoculation of virulent typhoid bacteria, and an attempt was made to study the antibiotic effect of penicillin on *Bact. typhosum* in these animals.

A B1 phage type was used which was partially inhibited by a concentration of 5, and completely by 10, units of penicillin per c.cm. Its virulence was increased by repeated passage until 50,000,000 organisms inoculated intraperitoneally killed a mouse weighing 25 g. within 24 hours.

Mice were given an intraperitoneal inoculation of 50,000,000 organisms. After 10 minutes five of the animals were injected subcutaneously with a solution of penicillin, each mouse receiving one injection only. Another series of five animals were given half-hourly subcutaneous injections of penicillin for three doses, each course starting 30 min. after an intraperitoneal inoculation of 50,000,000 of the test organism. Four more animals were given six half-hourly subcutaneous injections of penicillin, and a further five mice were given eight half-hourly subcutaneous doses of penicillin, each course starting 30 min. after inoculation with the standard number of the typhoid organisms. The doses of penicillin were arranged in parallel in amounts of 50, 100, 200, 400, and 800 units, so that the mice in each series received either one, three, six, or eight doses each of 50, 100, 200, 400, or 800 units.

An additional fourteen animals were inoculated with the organism and distributed as controls in the four experiments. Positive cultures were obtained from all the animals which died. The results are shown in table I.

DISCUSSION

Conclusions based on so few experiments would be misleading, but the results suggest that a retarding effect is exercised by penicillin on the rate of growth of *Bact. typhosum* in vitro and in vivo. In the test-tube experiments a concentration of over 8 units per c.cm. was necessary to inhibit most of the strains. Only a few were completely inhibited by lesser concentrations.

The results in the animal experiments also seem to indicate the same retardation of growth of the organism as judged by the time taken to kill standard mice inoculated with a constant dose of the same strain of bacterium, the penicillin-treated animals taking longer to die. An interval of 15½–50½ (average 31) hours before death was recorded for these animals, whereas the control animals

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were killed in 14–33½ (average 20) hours. The distribution of the results round these averages is almost equal, four out of the nine penicillin-treated animals dying in the shorter time, as compared with seven out of twelve control animals which died in a time shorter than the average. Only two of the penicillin-treated animals died in less than 20 hours after inoculation, which is the average figure recorded for the death of the controls.

The recovery-rate is greater (ten out of nineteen, or 53%) in those animals which were given penicillin than in the controls (two out of fourteen, or 14%). The difference becomes even greater if the animals which received only one injection of penicillin are not taken into account: nine out of fourteen (64%) of the treated animals recovered.

The inconsistency in the results as indicated by the recovery of two of the control mice cannot be explained unless by some unknown technical error, and it is again emphasised that conclusions cannot be drawn, and that the comments on the results are suggestions for further investigation.

TABLE II—BLOOD-PENICILLIN LEVELS IN MICE

Dose (units)	Titres at hourly intervals					
	1	2	3	4	5	6
800	1/128 1/256*p*	1/16 1/32*p*	.. 1/2	.. 1/2	.. 0	.. 0
400	1/32	1/4	1/2	1/4	1/4	1/4
200	1/2	1/2	1/2	0	1/2	1/2
100	1/2	1/2	1/2	1/2	1/2	0
50	1/1 1/2*p*	1/1 1/2*p*	1/1 1/2*p*	.. 0	.. 1/1	.. 0
Five half-hourly injections of 800 units	1/1024	..	..	..	..	..

p=partial inhibition.

At present there is no specific treatment for typhoid fever. If penicillin should prove useful in this disease, much would have been done to reduce the present mortality. It might be argued that the concentrations of penicillin, as judged by the results obtained in these laboratory experiments, necessary to produce an inhibiting effect are far too high. American workers [2] have shown that, by exhibiting penicillin in combination with the buffer salt tri-sodium citrate, a peak blood-penicillin level of 8 units per c.cm. was obtained even after oral administration of calcium penicillin. Table II shows the blood-penicillin levels obtained in mice after one subcutaneous injection of different quantities of penicillin and the blood-penicillin level in one mouse an hour after the last of five half-hourly injections of 800 units of penicillin.

SUMMARY

The sensitivity of sixty-six strains representing sixteen different phage types of *Bact. typhosum* has been examined. There was a considerable variation in sensitivity which was independent of the phage type. Most of the organisms required 5–10 units of penicillin per c.cm. to inhibit their growth for twenty-four hours.

The inhibitory effect of penicillin was also investigated in mice inoculated intraperitoneally with virulent typhoid organisms. Retardation of growth of the organism was recorded as judged by the longer time taken before death and the higher recovery-rate of penicillin-treated animals.

I am grateful to Brigadier J. S. K. Boyd, C.B.E., director of pathology, War Office, for supplying me with cultures and typing phages; Major K. E. A. Hughes, M.B.E., R.A.M.C., for working out the blood-penicillin levels; and Private J. E. A. Biggs, R.A.M.C., for technical assistance.

2. György, P. *J. Amer. med. Ass.* (in the press).

SULPHATHIAZOLE AND PENICILLIN IN TYPHOID FEVER

REPORT OF SIX CASES

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IN consequence of Bigger's [1] researches on the combined action of sulphathiazole and penicillin on *Bact. typhosum*, it was decided early in 1945 to treat with both drugs every severe case of typhoid fever admitted to Cork Street Fever Hospital. The treatment was reserved for those cases considered likely to prove fatal if dealt with in the orthodox fashion. Up to February, 1946, five cases (representing all the severe infections admitted during the period) were given sulphathiazole and penicillin. Four of these were bacteriologically proved by the culture of *Bact. typhosum* from the blood, and the fifth was clinically enteric with strongly positive Widal, and *Bact. typhosum* was isolated from fæces and urine.

At the start of this investigation (May, 1945) we had no guide to what might prove to be an effective system of dosage, and the first case of the series was given what we now regard as an inadequate amount of penicillin. *Bact. typhosum* is not a penicillin-sensitive organism in the usual sense of the term; but, as Bigger has recently shown, large doses of penicillin and sulphathiazole inhibit its growth. An exceptionally high concentration of the drugs in the blood must be maintained for four, five, or more days. In the first case of the series five penicillin-sulphathiazole courses were spread over as many weeks. As we learnt a lot from this case, I am giving it in some detail.

CASE 1

A girl, aged 16 years, admitted on May 7, 1945, on the 7th day of typhoid fever, presented all the classical signs: exceedingly toxic and drowsy, with a dry fissured tongue; temperature 102·8° F, pulse-rate 122, respirations 26 per min.; blood-culture, fæces, and Widal reaction positive for *Bact. typhosum* (serum agglutinated *Bact. typhosum* "H" strongly in dilutions of 1/250 but did not agglutinate "O" in dilutions from 1/8 to 1/250).

During the week after admission the patient's condition steadily deteriorated. The temperature showed very slight remissions, tending to be of the continuous type, a level of 102° F being maintained with a pulse-rate averaging 120 (fig. 1). During this period the patient had repeated epistaxis, exhibited subcutaneous bruising on chest and limbs, had frequent incontinent motions, and was steadily drifting into the "typhoid state."

On the 14th day of disease she had hæmaturia, hæmoptysis, and intestinal hæmorrhage, and her condition was critical. It was clear that this was a hypertoxic or hæmorrhagic typhoid. She had received 20 c.cm. of Felix's antityphoid serum each day since admission without any apparent benefit. Her blood-culture was still positive for *Bact. typhosum*, and it was decided to put her on sulphathiazole and penicillin. In the first course 40,000 units of penicillin was given intramuscularly every three hours, until 2,000,000 units had been given. Simultaneously, sodium sulphathiazole 1 g. was given intravenously, followed by 1 g. in tablet form by mouth every four hours between the 15th and 21st days of disease.

Definite improvement in the clinical condition was noted on the 22nd day; and, though the temperature showed no sign of settling, there was no severe toxæmia thereafter. The patient was reading a picture paper on the day after the first course was completed. But the blood-culture taken on the 21st day was positive, fresh rose spots appeared, and the temperature reached 102° F again on the 24th and 25th days.

It was evident that relapse was developing, and a second course of penicillin and sulphathiazole was started on the 25th day, the dosage being the same as before—i.e., penicillin 40,000 units intramuscularly every three hours and sulpha-

1. Bigger, J. W. *Lancet*, 1946, i, 81.

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thiazole 1 g. by mouth every four hours. This course of 1,000,000 units ended on the 28th day, but the blood was still positive for *Bact. typhosum*.

In spite of the fact that the temperature was still high, patient remained bright and cheerful, quite unlike a fourth-week typhoid. On the 32nd day the blood-culture was again positive (as were the fæces), and another course similar to the last was given.

The temperature was now varying from 100° to 101° F, and the patient was asking for food. This course was finished on the 35th day, and the blood-culture was again reported positive. On the 39th day yet another crop of rose spots appeared, and a second relapse began, the patient's evening temperature rising steadily each evening until it reached 103·4° F on the 43rd day.

Two further courses of penicillin and sulphathiazole were given—one of 1,000,000 units from the 39th to the 42nd day, and the second of 2,000,000 units from the 44th to the 48th day. The sulphathiazole dosage was the same as before, but in the last course the penicillin dosage was increased to 60,000 units three-hourly. Altogether 7,000,000 units of penicillin was given in five courses, comprising 2,000,000, 1,000,000, 1,000,000, 1,000,000, and 2,000,000 units.

Even after the end of the last course the blood-culture still remained positive. In spite of this the patient was not toxic, the stools became formed, and the temperature slowly subsided. A blood-culture taken on the 56th day was negative, as were the stools and urine. Convalescence was slow because of a carditis, which eventually cleared completely. Because of the protracted pyrexial period wasting was very considerable, and we kept her in hospital until Sept. 25, when she was discharged apparently well.

This case was disappointing in the persistently positive blood-cultures after what we at that time thought was intensive penicillin and sulphonamide therapy. It was clear that the drugs were not present in the blood in sufficient quantity to sterilise it, and it was decided to give much larger dosage to subsequent cases. In one way only the case was encouraging. There could be no question that toxæmia was considerably lessened all through this long fever after the first course of the drug, and there were no complications due to ulceration.

CASE 2

A woman, aged 40, admitted on Sept. 18, 1945, on the 6th day of her disease, had the usual clinical evidence of enteric fever, and her blood-culture was positive for *Bact. typhosum*. She was rather stout and flabby and was not a good subject for enteric; temperature 102° F, pulse-rate 108, respirations 34 per min.

When her blood-culture was reported positive on the 10th day she was given sodium sulphathiazole 2 g. intravenously and then 1 g. three-hourly by mouth for four days. During the same period she was given penicillin 200,000 units intramuscularly two-hourly. During the four days she received sulphathiazole 34 g. and penicillin 10,000,000 units.

The effect was very remarkable. When she started her course of treatment she had a *morning* temperature of 101° F, pulse-rate 124, and respirations 30 per min. Her stools were liquid, and fresh rose spots were appearing. When she finished the course four days later (14th day) her *evening* temperature was normal, pulse-rate 90, respirations 22, and her stools were formed. In a subject with evening temperatures of 102° F before treatment this is a very unusual happening on the 14th day of an attack of typhoid. Blood-culture at the end of the course was negative. The note made next day (15th day) was: "Patient feels well enough to get up, she says, and is wanting food." She was very bright and not complaining. Her stools were normal.

A second course exactly similar to the first was given between the 16th and 20th days—i.e., penicillin 10,000,000 units and sulphathiazole 34 g. The temperature finally settled before the end of this course (19th day) and remained normal thereafter. Blood-culture on completion of the course was negative, and five samples of fæces and urine taken subsequently were negative. A blood titration carried out by Prof. J. W. Bigger during the course of treatment showed that the concentration of penicillin in the blood was 2 units per c.cm., and of sulphathiazole 4·5 mg. per 100 c.cm.

CASE 3

A man, aged 47, admitted on Oct. 3, 1945, on the 15th day of disease, was a bad subject in that he was of very poor physique and had chronic bronchitis and emphysema. His mouth and teeth were septic. Blood-culture was positive for *Bact. typhosum*; temperature 103° F, pulse-rate 102, respirations 28 per min.

He was put on exactly the same treatment as case 2—i.e., two courses each of penicillin 10,000,000 units with sulphathiazole 34 g. spread over four days, the interval between the two courses being two days. During each course 200,000 units of penicillin was given every two hours intramuscularly and 1 g. of sulphathiazole by mouth every three hours. Before each course sodium sulphathiazole 1 g. was given intravenously.

Blood-culture taken at the conclusion of both courses was negative, and the stools and urine, cultured six times at intervals of a week, were negative on each occasion (stools had been positive on two occasions before treatment). This man had an evening temperature of 99° F for four days after the end of the second course of treatment, after which his convalescence was normal, except for the development of a painless cold abscess in his thigh, which on aspiration gave a pure growth of typhoid bacilli. Irrigation of the abscess cavity with penicillin solution on two occasions cleared this speedily.

CASE 4

A man, aged 57, was treated in the acute stage by my assistant, Dr. F. C. O'Herlihy. The patient was a huge man, weighing 19 st. before his illness. On admission, on the 14th day of disease, his condition was very poor. He was cyanosed, a little dyspnœic, and drowsy. There was a good deal of flatulent distension; heart in fibrillation; considerable albuminuria. History of malaria and dysentery, with several recurrences. A more unsuitable subject for enteric would be difficult to find.

His blood-culture being positive for *Bact. typhosum*, it was agreed to treat him along the same lines as cases 2 and 3. Accordingly, he was given 2 g. of sodium sulphathiazole intravenously on the 18th day, followed by 1 g. by mouth

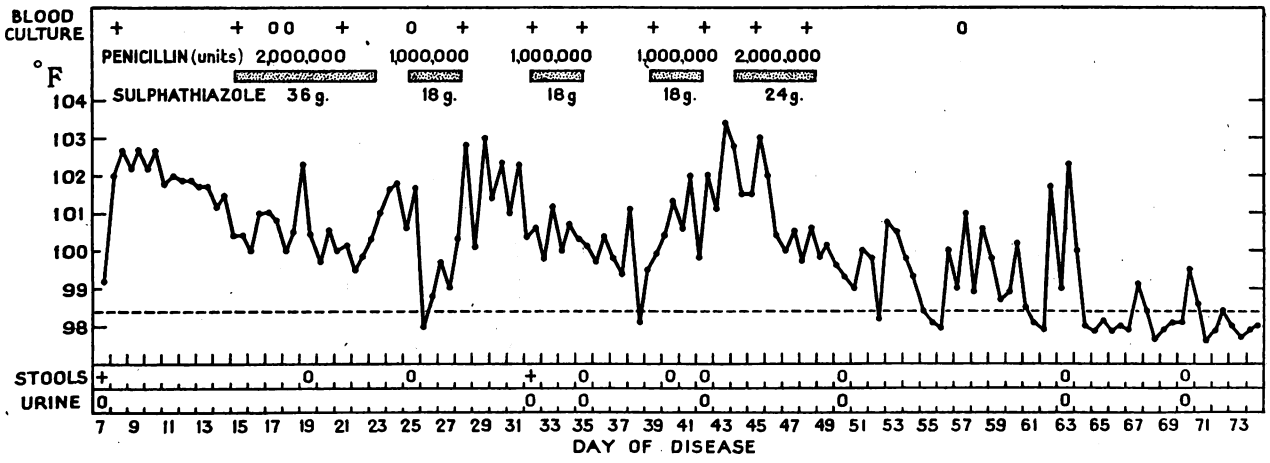

Fig. 1—Chart in case 1.

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every three hours, with 200,000 units of penicillin intramuscularly two-hourly, until a total of 34 g. of sulphathiazole and 10,000,000 units of penicillin had been given over a period of four days (fig. 2).

The patient's condition improved considerably; toxæmia was very much less, and the heart was not so irregular. On the day after the end of the first course Dr. O'Herlihy's note was: "Very bright this morning. Feeling very hungry. Flatulence less troublesome. No stool. Had a very good night's sleep. Heart more regular and tone fair. Pulse and temperature down." Blood-culture taken on this day (23rd of disease) was negative for *Bact. typhosum*, as were the fæces and urine.

Two days after the end of the first course blood appeared in the stools, and the second course of sulphathiazole and penicillin (identical with the first) was started. Blood continued to show in the stools for a few days, but the patient's condition steadily improved, and after the conclusion of the second course the temperature was normal and remained so thereafter. Blood-culture taken after the end of the second course was negative for *Bact. typhosum*, as were the stools and urine.

The subsequent course was very satisfactory. Temperature and pulse-rate remained normal; the heart was regular; the urine, which had been loaded with albumin, showed none or only a trace; the stools were formed and free of blood; and, apart from a slight peripheral neuritis of the feet, convalescence was uneventful. Five samples of his urine and fæces were negative for *Bact. typhosum* before his discharge from hospital.

It is difficult to imagine this patient recovering from so severe an attack of enteric fever, complicated as it was by intestinal hæmorrhage, if treated without sulphathiazole and penicillin. His age, physique, condition when coming under treatment, and previous medical history all indicated a grave prognosis. After the second course his condition gave rise to no anxiety, and his convalescence would have been considered rapid in a young and healthy patient.

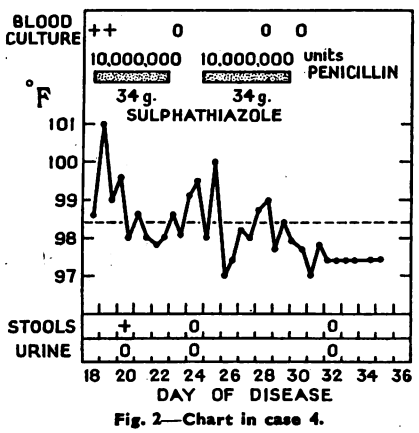

Fig. 2—Chart in case 4.

CASE 5

A girl, aged 17, admitted on Dec. 21, 1945, on the 14th day of disease, presented a typical enteric picture, with tumid distended abdomen, rose spots, enlarged spleen, and pea-soup stools. Widal positive (1/25,000 for *Bact. typhosum* "H," 1/32,000 for *Bact. typhosum* "O," and 1/200 for *Bact. typhosum* "Vi"). Her fæces were also positive for *Bact. typhosum*. Temperature 102·6° F, pulse-rate 110, and respirations 28 per min.

When the bacteriological confirmation was available (17th day) she was put on penicillin-sulphathiazole treatment. The dosage was exactly the same as for cases 2, 3, and 4—i.e., penicillin 10,000,000 units and sulphathiazole 34 g. administered in four days. At the end of the first course her temperature settled (fig. 3), her stools were formed, and toxæmia was absent. Blood-culture was negative for *Bact. typhosum*, but her stools were positive. She remained apyrexial for eleven days, and a blood-count after the first course showed that her white cells were down to 4000 per c.mm., with only 30% of neutrophils, so we withheld a second course of the drugs pending developments. Thirteen days after the first course was completed she had a relapse, during which her temperature reached almost 103° F on one occasion (36th day). Although her blood-culture remained negative, we gave her the second course of penicillin 10,000,000 units and sulphathiazole 34 g., after which she made a rapid recovery. Because of the leucopenia we did daily blood-counts while she was on the second course, but the total white-cell count actually increased, as did the percentage of neutrophils.

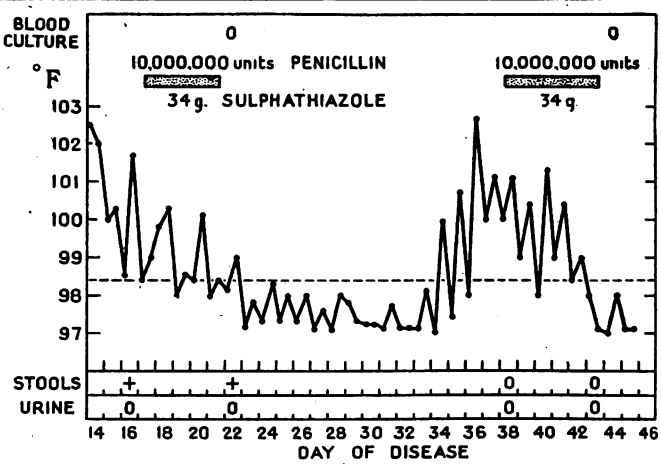

Fig. 3—Chart in case 5.

DISCUSSION

To draw general conclusions from five cases would be unwise; but it should be borne in mind that these cases were specially selected because of their severity, being the worst cases of typhoid admitted in nine months. All five patients recovered.

The most striking feature observed in the four cases given the high dosage was the disappearance of toxæmia, the speedy subsidence of pyrexia (which normally would have persisted for weeks), and the rapid return of formed stools. It is well known that during and after the third week of a severe enteric infection there are two main dangers which can occur singly or in combination: (1) steadily increasing toxæmia leading to the "typhoid state"; and (2) intestinal complications—e.g., hæmorrhage, perforation, meteorism, and excessive diarrhœa. No general or local deterioration developed in any of the four cases after the end of the second course of intensive treatment. On the contrary, the patients were bright, cheerful, and eager for solid food.

Because of the high dosage with sulphonamides blood-counts were done at short intervals—always at the beginning and end of a course of treatment. Only in one case (and this was after a single course) was any reduction in the neutrophils observed, and this was not aggravated by a second course of sulphonamides given later. This is in line with our general experience that sulphonamides given in very large doses over a period of a week are not so likely to cause neutropenia as when given in small doses over a long period. The system of dosage followed in the last four cases was arbitrary and may require modification with further experience.

SUMMARY

Five cases of severe typhoid were treated with sulphathiazole and penicillin.

The first case was given doses of penicillin appropriate for a staphylococcal infection, with no appreciable effect on the pyrexia or blood-cultures, although toxæmia was much lessened, and there were no complications due to ulceration.

The next four cases were treated intensively with penicillin and sulphathiazole, receiving two courses each comprising 10,000,000 units of penicillin and about 34 g. of sulphathiazole given in four days. Speedy disappearance of toxæmia, subsidence of pyrexia, and disappearance of organisms from the blood, fæces, and urine followed the end of the second course in three of the four cases. In the fourth case, when the second course was postponed for about a fortnight, there was a relapse, which rapidly subsided when the second course was initiated.

The clinical effects appear to confirm the laboratory findings of Bigger.[1]

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POSTSCRIPT

Since this paper was submitted for publication another severe case of typhoid fever has been treated with penicillin and sulphonamides, as follows:

CASE 6.—A girl, aged 17 years, admitted on March 16, 1946, in the 3rd week of her typhoid, gravely ill, bordering on "typhoid state." Clinically enteric—abdomen very distended, spleen palpable, rose spots present, temperature 102°–103° F, pulse-rate 122–140, respirations 30–36 per min., Widal positive for *Bact. typhosum* "H" to 1/250 and for "O" to 1/50.

Because of the patient's grave condition it was decided to start penicillin-sulphonamide treatment before the result of the blood-culture was available, and, accordingly, the system of treatment followed in the last 4 cases of the series described above was initiated on March 18. The first course was finished on the 21st; the second began on the 24th and terminated on the 28th. After the conclusion of the second course the temperature, which had ranged between 100° and 104° F while the treatment was being applied, underwent lysis and has been settled since April 6. Toxæmia was much lessened from the time the treatment was started and was absent before the second course was concluded. The blood-cultures taken on the conclusion of the second course were negative and ten samples each of fæces and urine examined during and subsequent to the treatment were negative for *Bact. typhosum*. No ulcerative accidents of any kind occurred, and the patient's condition gave rise to no anxiety after the conclusion of the second course of treatment.

There appears to be a strong prima-facie case for extending this new line of treatment to the typhoid carrier state, and investigations along these lines are in progress in Eire.

I am indebted to the Medical Research Council of Ireland for a grant in connexion with this investigation.

MALARIA TRANSMISSION IN BORNEO

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THIS paper is a brief account of malaria research carried out under the North Borneo Government for three years before the war. It should normally have been published in 1942, but the Japanese occupation of Borneo and my internment by them prevented this.

Before this work, *Anopheles maculatus*, the chief vector of malaria in the interior of Malaya, was regarded as the chief vector in Borneo also; but this belief was based on the indirect evidence of its Malayan reputation and not on the direct evidence of dissections. During initial work on the coast of Borneo in 1939, however, this belief in the virulence of *A. maculatus* could not be reconciled with the facts, particularly the healthiness of certain towns where *A. maculatus* abounded.

Later work was carried out in the interior at Tambunan, an isolated plain at an altitude of 2000 feet, occupied largely by irrigated paddy fields, surrounded by high jungle-covered hills, and subject to intense malaria. Here a larval survey found the whole area to be virtually one vast anopheles breeding-place, with twelve species or varieties of anopheles breeding widely; and the problem seemed to be to control rather than to explain the malaria. Of the twelve anopheles, four were under suspicion, and the remaining eight were discounted.

A malaria survey found a curious situation. In the centre of the plain, where anopheles bred most intensely, there was little malaria; but malaria increased toward the hills, until in the hills and hill ravines malaria was universal in spite of apparently sparse breeding of anopheles. This was taken as evidence in favour of the assumption that *A. maculatus* was the vector, and led to the adoption of the rule that intensity of malaria was proportional to proximity to the hills. To this rule, however, there was a peculiar exception, a village in a hill ravine which showed only 25% of malaria. Attempts to explain this were futile: the assumption that there were fewer anopheles there was soon found to be false; and the idea that *A. maculatus* was less abundant there was dispelled by a survey which demonstrated that *A. maculatus* was much more abundant than usual, for jungle-clearing had created ideal breeding-places for them.

DISCOVERY OF THE VECTOR

Indirect evidence for the vector, therefore, was inconclusive, and attention was directed to its incrimination by actual dissection. Here another difficulty arose. Widespread search of native huts for many months did not lead to the capture of a single anopheles. No mosquitoes were ever seen, and the natives, in even the most malarious situations, were emphatic that they were never bitten by mosquitoes. Here was an area with widespread breeding of potentially dangerous mosquitoes, and with intense malaria, but with apparently no adult mosquitoes to transmit the infection.

A human-bait trap, of a design successful in other parts of the world, likewise virtually failed. Operation of the trap every hour, from sunset to dawn, in various situations and in every season of the year, captured an average of only one mosquito every twelve hours of trapping, and trapping was sometimes carried out for many nights in highly malarious villages without a single mosquito being taken. Captures of *A. maculatus* were so sparse that to afford sufficient dissections by this method would have employed an operator all night every night for many years. Searches on cattle were at first equally unsuccessful, until it was discovered that anopheles came out and fed on the animals in large numbers at dusk, and disappeared shortly after dark.

The first light on the situation came when a comparison of the relative yields after some months of human-bait and animal-bait trapping showed that practically all species of anopheles in the locality had a high preference for animal blood and little interest in human bait. *A. maculatus*, for example, sought animal blood in 85% of cases. These insects, therefore, could not be regarded as important vectors of human malaria. Further, it was found that only one species of anopheles had a preference for human blood, but a preference which it showed in 90% of cases. This mosquito was *A. leucosphyrus*, which had previously been discounted because of its harmless reputation elsewhere and its apparently extreme rarity in Tambunan, in both larval and adult stages.

With this information, renewed search was made for dissection material, especially *A. leucosphyrus*; and finally natives, whom we had been encouraging to use anti-malarial measures, brought in anopheles captured in defective mosquito-nets. These mosquitoes all proved to be *A. leucosphyrus*. Dissections of these proved *A. leucosphyrus* to be a vector, and 25 positives proved it to be almost certainly the only vector in the locality, all other species, including *A. maculatus*, remaining negative out of a total of 2700 dissections.

Epidemiological and other evidence is in favour of *A. leucosphyrus* as a vector in many other places in Borneo, and a study of the records shows that it has been found infected in Dutch territory. It appears to be the most widely distributed mosquito in Borneo and is almost certainly the chief vector of malaria throughout the island. Far from being rare in the locality, it was breeding widely, but unconventional methods of search, often including the felling of jungle, were required for its discovery, because, unlike most malaria vectors, it breeds only in the jungle.

The mystery of malaria transmission was finally solved by watching all night in houses where the mosquito had already been captured in defective nets. This revealed that the insect was entering the houses long after midnight, feeding on the sleeping and unsuspecting

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natives, and flying away long before dawn. It seemed to be too impatient a feeder to be captured by the human-bait trap.

ATTEMPT TO CONTROL

The incrimination of a jungle-breeding mosquito explained why the centre of the plain, with its widespread but harmless mosquito-breeding, was healthy; why the jungle-covered hills were malarious; why the jungle-free village in the hills was malaria-free, in spite of many mosquitoes breeding there; and why the towns of Borneo, being cleared of jungle, were healthy in contrast to their highly malarious jungle-covered environs.

Such a discovery is only of value if it can be applied to practical malaria control; so an attempt was made to abolish *A. leucosphyrus* by jungle-clearing and other methods. In a village with a spleen-rate of 100% jungle was cleared for an average distance of 30 feet round each breeding-place of *A. leucosphyrus* in the locality. Unfortunately the Japanese occupation of Borneo interrupted the experiment when only half the 150 breeding-places had been dealt with; hence it failed as a demonstration of malaria control, though it succeeded as a demonstration of simple jungle-clearance and the admission of sunlight as an easy and immediately effective measure of control of *A. leucosphyrus*, a control which would appear to be permanent if cattle were admitted to graze.

Though the unfinished experiments failed to control malaria, there appears to be a considerable weight of evidence to support the belief that in Borneo the simple clearance of jungle has led to the control of malaria in several places. The general healthiness of cultivated areas, towns, and other open spaces in Borneo is usually in strong contrast to the highly malarious nature of jungle-covered areas.

IMPLICATIONS OF DISCOVERY

Thus the conditions in Borneo appear to be the reverse of those in Malaya. Certain measures that are successful for the control of malaria in Malaya may, in Borneo, encourage the very disease they are intended to control. In the interior of Malaya, the land becomes malarious when jungle is disturbed and *A. maculatus* thereby introduced; whereas in Borneo when jungle is destroyed the land appears to become healthy. The economic importance of this is considerable. It means that industrial progress in Borneo should not be, as in so many other countries, a menace to health by encouraging malaria, but that economic development of any kind which destroys jungle should lead to malaria control in Borneo; and measures for the control of malaria there should contribute at the same time to economic prosperity.

A. leucosphyrus is regarded in most other countries as harmless. In Malaya, for example, its presence is considered to indicate a healthy area, as it means the absence of the proved vector, *A. maculatus*. On the other hand, the evidence for the harmlessness of *A. leucosphyrus* in other countries is slight. In Borneo it has taken two years to discover that *A. leucosphyrus* is a dangerous vector, or even to discover its presence in considerable numbers, because it is so elusive. In Tambunan it was so difficult to find by conventional methods that, had some other common vector, such as *A. minimus*, been present, it is certain that this would have been accused of the whole responsibility for local malaria, and *A. leucosphyrus* would have escaped incrimination.

The published work shows that though often claimed to be harmless—e.g., in Ceylon, Malaya, India, and elsewhere—wherever *A. leucosphyrus* has been studied in adequate numbers it has always been found positive on dissection. *A. leucosphyrus* may prove to have much more relation to malaria in other parts of the world than has hitherto been supposed, its presence being masked by its elusiveness, and its virulence by the presence of some other much more easily captured and incriminated mosquito.

SUMMARY

Anopheles maculatus has hitherto been regarded as the chief vector of malaria in Borneo; and *Anopheles leucosphyrus* has generally been regarded as harmless both in Borneo and throughout the East.

Work done in Borneo, however, shows that *A. maculatus* has little, or probably no, importance as a vector of malaria there.

A. leucosphyrus, on the other hand, has been shown to be the most dangerous vector of malaria, probably throughout the greater part of the island.

A. leucosphyrus, being a purely jungle-breeding mosquito, is easily controlled by localised jungle-clearance round its breeding-places. Further evidence of the success of this as an antimalarial measure in Borneo is found in the general healthiness of the cultivated areas, towns, and other localities which have been cleared of jungle.

Measures appropriate for malaria control in Malaya and other countries may not only fail but may even encourage the disease in Borneo.

The methods of malaria control suitable for Borneo are cheap, simple, effective, and permanent, and go hand in hand with the economic development of the land.

Since *A. leucosphyrus* is so elusive, it may be an important vector in other countries where it has not hitherto been considered of consequence, but where its virulence is being masked by the presence of some less elusive vector.

I have pleasure in acknowledging the coöperation of the British North Borneo Government and the helpful interest of Sir Malcolm Watson, then Director of the Ross Institute, in this work, a full account of which will be published shortly.

PENICILLIN VIA FALLOPIAN TUBES

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EVEN a very mild infection of the tubes after an operation for sterility may jeopardise the final result, despite the improved technique of Westman (1944).

In an attempt to eliminate this risk the course was adopted nearly a year ago of instilling penicillin solutions into the tubes during the four or five days immediately following the operation. It is impossible to assess the value of this procedure unless we know how the penicillin is absorbed and excreted after such instillations. For this reason the following experiment was made. Five patients showing no sign of kidney injuries were each given a single intramuscular dose of penicillin 20,000 units. On a later occasion the dose was administered by instillation through one of the tubes. The penicillin concentrations in the blood and the urine were followed during the experiment.

First a single dose of penicillin 20,000 units was given intramuscularly. Twenty-four hours later an equal dose was instilled into the tube with the aid of the instruments used in salpingography. Blood samples were taken in sterile tubes at intervals of $^1/_2$, 1, 2, and 4 hours after the administration of the dose and immediately placed in the refrigerator. Their bacteriostatic powers were then determined by the method already published (Frisk 1945). All urine was collected quantitatively during the twelve hours following the dose. Urine samples were taken by catheterisation after 1, 2, 4, 6, 8, and 12 hours. Their volumes and pH values were measured, and the latter were adjusted to 6–7 if they lay outside this range. A 10-ml. portion of each sample was taken for assay, shaken with three drops of chloroform, and

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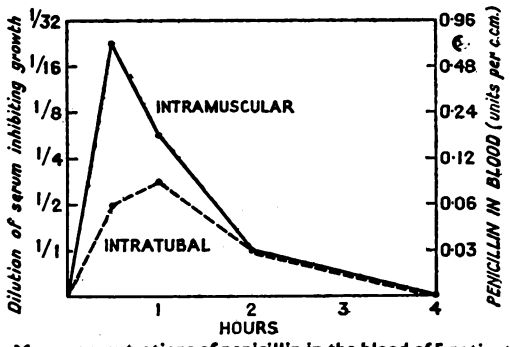

Fig. 1—Mean concentrations of penicillin in the blood of 5 patients after intramuscular and intratubal administration.

immediately placed in the refrigerator. The samples were then assayed in quadruplicate by the cylinder-plate method of Heatley (1944). In each case the standard solution, in terms of which the penicillin content of the urine was expressed, was a portion of the solution used in the experiment concerned.

RESULTS

Fig. 1 shows the mean concentrations of penicillin in the blood, and fig. 2 the mean amounts excreted in the urine in these five patients after intramuscular injection and tubal instillation of 20,000 units of penicillin.

After intramuscular administration a blood concentration-time curve was obtained which agreed completely with the relationship earlier described (Frisk 1945). If the same dose is administered tubally, the maximal concentration first appears in the blood after an hour. This value is then only from a fifth to an eighth of that found after intramuscular administration.

The slower absorption after intratubal administration is further demonstrated in fig. 2, which represents the excretion of penicillin in the urine. After intramuscular injection 90% of the total amount of penicillin recovered from the urine was excreted within two hours; after four hours the excretion was practically complete. In these experiments a mean of 61% of the dose was recovered, with variations for the individual experiments from 54% to 78%. This agrees with previous observations (Heatley 1944, Herrel 1945).

If, on the other hand, penicillin was introduced by way of the tubes, only 62% of the recovered quantity was excreted in two hours, and penicillin could be

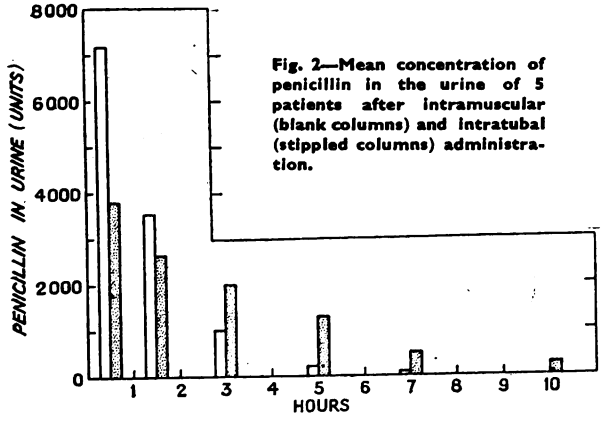

Fig. 2—Mean concentration of penicillin in the urine of 5 patients after intramuscular (blank columns) and intratubal (stippled columns) administration.

detected in the urine after ten hours. Here a mean of 51% of the dose was recovered, with variations from 49% to 58% for the individual experiments.

DISCUSSION

When penicillin is administered by instillation into the tubes, in which circumstances the greater part should enter the peritoneal cavity, the absorption is only insignificantly lower than after intramuscular injection. When equal doses are given in all cases, a mean of 61% is recovered in the urine after intramuscular injection, the corresponding figure for intratubal administration being 51%. Penicillin is absorbed more slowly, on the other hand, when it is given through the tubes than when it is injected intramuscularly. Consequently the concentrations in the blood become smaller and a longer time elapses before the excretion by the kidneys is completed after tubal administration than when the same dose is given intramuscularly. Similar relationships have been observed after intrapleural application (Heatley 1945).

The practical consequence of instillation of 20,000 units of penicillin into the tubes every twelfth hour is that a high bacteriostatic concentration can continually be maintained locally in the tubes and the lower part of the peritoneal cavity. There is therefore a possibility of preventing or treating, by local penicillin therapy, infections in the tubes and the pelvis caused by bacteria sensitive to penicillin. This form of treatment may perhaps prove valuable in salpingitis, which is otherwise difficult to combat.

REFERENCES

Frisk, A. R. (1945) *Nord. Med.* **28**, 2249.
Heatley, N. G. (1944) *Biochem. J.* **38**, 61.
— (1945) *Lancet*, 1, 590.
Herrel, W. E. (1945) Penicillin and Other Antibiotic Agents, London.
Westman, A. (1944) *Nord. Med.* **22**, 1161.

DIGESTIBILITY OF HIGH-EXTRACTION WHEATEN FLOURS

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THE present world wheat shortage, particularly the critical shortage of cereals in Germany, Austria, and India, has focused attention on the rate of extraction of wheat which will give the maximal yield of available calories.

Macrae et al. (1942), using as subjects six healthy young men, determined the digestibility of bread made from 73% and 100% extraction flours in terms of energy and nitrogen. The diet during the experimental period was adjusted so that the bread contributed 74% of the energy intake and 90% of the total nitrogen; the total daily calorie intake of the diet ranged between 2800 and 3400 calories. The experiments lasted from eleven to twelve days. The white bread gave digestibilities of 96·1% (energy) and 91·1% (protein), and the corresponding figures for wholemeal bread were 87·0 and 85·5; the granularity or particle size of the flours had no effect on digestibility. Using these data and making the reasonable assumption that the digestibility of a flour in terms of energy is proportional to its fibre content, Moran and Pace (1942) calculated the following average digestibilities:

% Extraction.....	75	85	90	95	100
% Digestibility (energy).	97·0	93·9	91·5	88·7	86·3

These figures indicate further that the digestibilities of the increments between extraction-rates of 85–90%, 90–95%, and 95–100% are approximately 50%, 40%, and 40%.

In a reconsideration of the problem McCance et al. (1945) have concluded that the available calories in 100 g. of 100%, 85%, and 75% flours (all at 15% moisture content) are 310, 340, and 342. From these figures it may be calculated that the available calories in the fraction remaining in the milling of 85% flour (15% offals) amount to 140 calories per 100 g. of offals. If therefore the digestibility of 75% flour is taken as 97%, the digestibility of the 85–100% fraction is 40%. Expressed in

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another way, the available calories contained in the flours milled to different extractions from the same bulk (100 g.) of wheat are as follows:

% Extraction	75	85	90	95	100
Available calories per 100 g. of wheat *	256	289	296	303	310

* Moisture content 15%.

As will be shown below, these investigations provide evidence that, where calories are the only concern, the optimal extraction of wheat is 100%. It should also be noted that the digestibility figures of Macrae et al. take into account any "intestinal hurry" due to the action of the bran, at least in the case of healthy young men. In view, however, of the great importance of the problem at the present time we have, with some trepidation, carried out a few experiments on the in-vitro digestibility of bran (wheat and rye).

EXPERIMENTAL

In the milling of 85% extraction flour the miller cleans the bran so thoroughly that the amount of endosperm remaining in the 15% offals is very small. Thus in the experiments of McCance et al. the fibre content of these offals was 10·5% against about 12% for the cleanest bran obtainable by special methods in the laboratory. The digestibility of high-extraction flours really hinges therefore on the amount of bran present and the extent to which it is utilised by man. Bran consists of the outer fibrous layer of the wheat grain (made up of the pericarp, testa, and hyaline layers) and its attached aleurone layer, together with a small and variable amount of endosperm. It is well known that the endosperm of wheat is more or less completely digested, and that the outer fibrous layer of the wheat grain is not so well digested by man, though it is largely available (by bacterial action) to ruminants.

Two samples of bran milled from a mixture of English and Canadian wheats were chosen. Sample I was a floury bran with an appreciable amount of endosperm adherent to it. Its fibre content was 7·20% (at 12·5% moisture), showing that it contained about 40% of endosperm. Sample II was a bran which had been cleaned very thoroughly with a special machine and contained only a trace of endosperm. The cleaning of this bran, however, had not been so severe as to remove any aleurone layer, as was apparent from microscopical examination. The fibre content of this sample (corrected to 12·5% moisture) was 11·8%.

Both samples were finely pulverised in a disintegrator type of mill to pass through a screen pierced with holes $^1/_{24}$ in. in diameter and thereafter were well mixed. Portions of these two powdered brans were set aside and labelled (I) and (II) respectively. The remainder of each was then made into a dough with water, with the addition of 1% of yeast and 0·25% of salt, which was then made into biscuits. When baked, these biscuits were dried thoroughly in a current of warm air and pulverised in the disintegrator mill. The comminuted biscuit baked from sample I was labelled sample III, and that from sample II was labelled sample IV.

The moisture content of all four final samples was determined (4 hours at 105° C), and the amount of fibre in them, as follows:

Sample	I	II	III	IV
% Moisture	11·5	9·8	7·3	5·6
% Fibre calculated to 12·5% moisture	7·2	11·6	7·1	11·8

As might be expected, the fibre content was not changed by the baking and regrinding of samples I and II.

Digestion of samples was planned to simulate reasonably closely the three stages of digestion in man: (1) salivary digestion, (2) acid gastric digestion, and (3) alkaline intestinal digestion. It was, however, clear that in such a programme at least two expedients would have to be adopted which do not obtain in normal digestion: (1) an estimate would have to be obtained of the initially soluble materials present in the samples, some of which perhaps require no digestion before being available for assimilation; and (2), it being impossible to simulate the action of the intestinal flora, a preservative would be necessary during incubation.

Four 250 ml. Erlenmeyer flasks were taken for each sample, and 20 g. lots of the sample were weighed into each flask. As the same procedure was followed for each sample, it will be sufficient to describe the fate of the four 20 g. lots of any one sample.

To flask 1 was added 100 ml. of distilled water at a "striking" temperature of just over 40° C, so that the final temperature after mixing with the bran was 37° C. This was incubated for half an hour at 37° C and was then rapidly filtered on a tared paper under suction. The paper was washed twice with about 25 ml. of water and was then dried at 105° C for four hours and weighed, the drying (for periods of an hour) and weighing being repeated in the usual way until a constant figure was obtained. The dry material was carefully preserved in the desiccator.

To each of flasks 2, 3, and 4 were added 100 ml. of a filtered 10% solution of saliva in 0·1% NaCl solution, again at a suitable striking temperature. Incubation at 37° C proceeded for half an hour, after which flask 2 was treated precisely as flask 1.

To each of flasks 3 and 4 were added 1·5 ml. of conc. HCl and a few drops of saturated sodium acetate solution to bring the pH to about 2·0, thymol blue being used as external indicator. Then 0·5 g. of pepsin dissolved in 20 ml. of water was added, and the mixture was incubated for four hours.

Flask 3 was now treated exactly as flasks 1 and 2.

To flask 4 30% caustic soda was added cautiously and with frequent shaking until a pH of about 8·4 was reached. Phenol red was used as external indicator—it was made to turn red, but the liquor was not sufficiently alkaline to produce colour when tested with cresol-phthalein. To the flask was then added 20 ml. of a solution containing 0·5 g. of trypsin, 2 ml. of liquor pancreatini (*B.P.C.*), and 2 mg. of merthiolate. The concentration of the merthiolate had previously been shown by plating experiments to inhibit completely bacterial and mould growth for twenty-four hours. Incubation was continued for sixteen hours, and the contents of the flask were then treated exactly as its predecessors.

The dry residues from the various digestions were assayed for nitrogen by the micro-Kjeldahl technique, with copper selenite as catalyst, and a digestion period of three hours.

The complete results are shown in tables I–IV. A similar series of experiments with uncooked and cooked rye bran gave very similar results.

DISCUSSION

Microscopical examination of the bran samples subjected to the full in-vitro digestion showed that the contents of the aleurone cells had almost entirely disappeared. As digestion was not quite so thorough as normal human digestion, lacking intestinal flora, duodenal secretion, and succus entericus, the figure of 34% for the digestibility of the solids in cooked clean bran is in reasonable accord with the 40% figure calculated earlier in this paper. By contrast, the value of 65% for the digestibility of the protein of bran seems high; but McCance (1946) suggests that the nitrogen, even in a 90% extraction flour, is largely absorbed, the increased amount of nitrogen excreted in the fæces being due to intestinal secretions rather than to indigestible protein in the flour; and Borgström (1941) found that, in man, the provision of 30 g. of bran in an otherwise nitrogen-free diet, though increasing the fæcal excretion of nitrogen, yet brought the experimental subjects into positive N balance.

Dr. J. C. Hinton, working in these laboratories, has found by dissection and micro-analysis that, with one sample of wheat, the fibrous and aleurone layers amounted to 8% and 7% of the weight of the grain

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TABLE I—WEIGHT OF BRAN IN GRAMMES AFTER EACH STAGE IN DIGESTION

Sample	Initial weight	Weight after—			
		½ hr. autolysis at 37° C	½ hr. ptyalin digestion pH 6·0	4 hr. pepsin digestion pH 2·0	16 hr. pancreatin digestion pH 8·0–8·5
I Ordinary bran ..	17·70	15·02	15·10	13·17	9·16
II Cleaned bran ..	18·03	15·18	15·35	14·28	12·78
III As (I) but cooked	18·55	15·36	12·22	10·56	8·95
IV As (II) but cooked	18·90	15·45	15·26	14·07	12·63

TABLE II—LOSS IN WEIGHT OF BRAN AFTER EACH STAGE IN DIGESTION AS % OF INITIAL WEIGHT

Sample	Initial weight	Loss in weight after—			
		½ hr. autolysis at 37° C	½ hr. ptyalin digestion pH 6·0	4 hr. pepsin digestion pH 2·0	16 hr. pancreatin digestion pH 8·0–8·5
I Ordinary bran ..	100 %	15 %	15 %	26 %	48 %
II Cleaned bran ..	100 %	16 %	15 %	21 %	29 %
III As (I) but cooked	100 %	17 %	34 %	43 %	52 %
IV As (II) but cooked	100 %	18 %	19 %	26 %	34 %

respectively, while their N contents were 0·7% and 3·15%. Further, the volume of the aleurone cells was roughly two-thirds of that of the aleurone layer. On these data the two digestibility figures of 34% and 65% for energy and protein are what might be expected, if we assume that the digestion of bran is essentially the digestion of the contents of the aleurone cells and neglect any digestion of the fibrous layer and aleurone cell walls by bacterial action. Fowls apparently utilise bran to about the same extent as man does. Thus Halnan (1944), using a coarse bran of fibre content 9·9%, found that, with fowls, it had a digestibility of 40·9% (calories) and 68·5% (nitrogen).

Using the generous conversion factors of $^1/_8$ and $^1/_{12}$, it appears that 100 g. of bran would give 38 and 25 calories in the form of eggs and pig meat respectively. The cow is of course the best converter; but, even so, the feeding of bran in the production ration of a milch cow leads to a slight loss of calories when compared with the calories yielded by the bran fed direct to man. Present-day bran has a protein equivalent (P.E.) of about 10% and a starch equivalent (S.E.) of 40%. Milk-production requires $^1/_2$ lb. P.E. and $2^1/_2$ lb. S.E. per gallon, and thus bran, not perfectly balanced for milk-production, would give 20 gallons of milk/100 lb. on a P.E. basis or 16 gallons/100 lb. on a S.E. basis. Taking the mean of these two values, it follows that 1 lb. of bran yields 1·44 pints or 28·8 oz. of milk. Therefore 100 g. of bran yields 180 g. of milk with a total calorie value of 118, which is somewhat less than the 140 calories available if the bran is fed direct to man.

This calculation is, however, based on the production ration only; the cow also requires additionally a maintenance ration of materials such as grass (and/or hay), roots, &c., which is largely inedible to man but which must provide daily about 7 lb. of S.E. and $^3/_4$ lb. of P.E. and for which the cow gives no return. In fact this maintenance ration fed to an average or medium producing dairy cow ($3^1/_2$ gallons a day) represents about 45% of the total ration on a S.E. basis and almost 30% of the ration in respect of P.E. Assuming then that the cow was dispensed with and the bran fed to man, the cow's maintenance ration could well be used for maintenance *and production* in sheep, thus providing more food and calories for man.

Nevertheless the theoretical gain in calories by milling to 100% extraction over that obtained by milling to (say) 85% extraction and feeding the 15% offals to cows is marginal. Thus, consider the case where 300 g. of wheat is available per person. Milled to 100% extraction this will supply 930 calories. Milled to 85% extraction the 255 g. of flour will supply 867 calories, while the 45 g. of offal will supply about 3 oz. of milk containing 52 calories, a total of 919 calories. In the case of a starving population other more practical considerations are however probably of the first importance. Thus (1) the maintenance ration cannot be ignored, and bran can only form part of the production ration; (2) in practice all the offals might not go to cows, and we understand in fact that in Germany, when the extraction was 90%, much of the bran was fed to horses; (3) milling to 100% will tend to secure a more equitable distribution of calories between the urban and rural populations; and (4) though children must have milk, the criticism that it would be better, even with adults, to sacrifice some calories to provide more animal protein is probably not serious, in view of the fact that the German diet, consisting mainly of high-extraction flour, green vegetables, and potatoes, while seriously deficient in calories, is not otherwise basically unsatisfactory.

Under more normal conditions the problem is obviously very different. Granted that bread flour must contain satisfactory levels of the different nutrients, the correct balance must be struck between the extraction-rate of this flour and the supply of wheat offals necessary to provide the milk, eggs, and bacon essential for a palatable diet and the full health of a community. It is in fact clear that under such conditions the extraction-rate need not exceed 80% (*Report of Conference on Post-war Loaf* 1945).

From the few experiments we have carried out, wheat and rye brans appear to behave in much the same way during digestion. It is therefore paradoxical that, though even in Germany 100% extraction is regarded as satisfactory for rye, there was considerable reluctance to exceed 90% extraction for wheat.

WHEAT ECONOMY AND THE EXTRACTION-RATE

Raising the extraction-rate reduces the consumption of wheat. Thus, with no change in the consumption of flour and bread per head, extraction-rates of 85, 90, 95, and 100% will reduce the requirement of wheat, compared with that required at 80% extraction, by 5·6, 11·2, 16, and 20% respectively. There is, however, an invisible reduction in the calorie intake supplied by flour as the extraction-rate is increased. From the figures quoted in

TABLE III—PERCENTAGE OF PROTEIN AFTER DIGESTION STAGES (DRY MATTER BASIS)

Sample	Initial % (N × 5·7)	% after autolysis ½ hr. at 37° C	% after ptyalin digestion ½ hr. pH 6·0	% after pepsin digestion 4 hr. pH 2·0	% after pancreatin digestion 16 hr. pH 8·0–8·5
I	16·0	15·8	15·70	8·3	6·35
II	15·8	13·0	13·0	8·4	6·10
III	15·1	15·8	20·0	13·4	7·55
IV	14·9	15·8	15·85	12·9	7·90

TABLE IV—PERCENTAGE OF TOTAL INITIAL PROTEIN DISSOLVED OR DIGESTED AFTER EACH STAGE

Sample	Initial protein	Autolysis ½ hr.	Ptyalin ½ hr.	Pepsin 4 hr.	Pancreatin 16 hr.
I	100 %	16 %	16·5 %	61·5 %	79·5 %
II	100 %	31 %	30·0 %	58·0 %	72·5 %
III	100 %	13 %	12·5 %	49·5 %	76·0 %
IV	100 %	13 %	14·0 %	36·0 %	65·0 %

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this paper, loaves made of 100, 95, and 90% extraction flour will on the average only contain 90, 93, and 96% respectively of the available calories contained in a loaf of the same weight made from 80% flour. Further, the higher the extraction, the more water a flour can hold. Thus, whereas at 80% extraction 1 lb. of flour will give about 1·37 lb. of bread, 90, 95, and 100% extraction flours will give 1·40, 1·42, and 1·44 lb. of bread. Even without any reduction in the consumption of bread, therefore, and neglecting the loss of animal foodstuffs due to the reduction in the supply of wheat offals, the effect of raising the extraction from 80% to 90% is to reduce the available calories supplied by bread by 6%.

SUMMARY

The digestibility of a high-extraction flour is governed by the amount of bran it contains.

An analysis of previous work shows that the bran removed in the milling of wheaten flours of extraction higher than 85% has a digestibility (energy) of about 40%.

In-vitro experiments on a cooked clean bran have given a minimal digestibility of 34% (energy).

The in-vitro digestibility of the nitrogen in bran is about 65%.

The process of digestion of bran consists essentially of the absorption of the contents of the aleurone cells.

Apart from any reduction in the consumption of bread, raising the extraction from 80% to 90% has reduced the calories supplied by bread by 6%.

REFERENCES

Borgström, S. (1941) *Acta physiol. scand.* **2**, 1.
Halnan, E. T. (1944) *J. agric. Sci.* **34**, 133.
McCance, R. A. (1946) *Lancet*, i, 77.
— Widdowson, E. M., Moran, T., Pringle, W. J. S., Macrae, T. F. (1945) *Biochem. J.* **39**, 213.
Macrae, T. F., Hutchinson, J. C. D., Irwin, J. O., Bacon, J. S. D. McDougall, E. I. (1942) *J. Hyg., Camb.* **42**, 423.
Moran, T., Pace, J. (1942) *Nature, Lond.* **150**, 225.
Report of Conference on Post-war Loaf (1945) Cmd. 6701, H.M. Stationery Office.

Reviews of Books

Bacillary Dysentery, Colitis, and Enteritis

JOSEPH FELSEN, M.D., director of medical research, Bronx Hospital, New York; director of International and Pan-American Dysentery Registry. London: W. B. Saunders. Pp. 618. 30*s*.

INFLAMMATORY diseases of the small and large intestine make up an important section of general practice, and Dr. Felsen has collected a comprehensive record of our present knowledge of this difficult subject. The progress made during the war years in treatment is well covered, and a reasoned evaluation of sulphonamide therapy in bacillary dysentery leads him to conclude that for general use the combination of a relatively non-absorbable with a freely absorbable sulphonamide—such as succinyl sulphathiazole with sulphadiazine or sulphathiazole—may be more desirable than either type alone. He concludes that the final evaluation of sulphonamide therapy in acute bacillary dysentery awaits "more accurate criteria of cure than those commonly presented in the literature." Over 280 pages are given up to the various aspects of acute bacillary dysentery. Under chronic bacillary dysentery he includes ulcerative colitis and regional ileitis, since he holds the view, for which he gives summarised data, that these diseases all have a common pathogenesis. Much of this argument is controversial, but the evidence is fairly given, and the reader may form his own opinion. Besides serving as a reference book to the specialist, this should prove useful to the practitioner in handling his cases of diarrhœa.

Regional Analgesia

(2nd ed.) H. W. L. MOLESWORTH, F.R.C.S., senior surgeon, Royal Victoria Hospital, Folkestone. London: H. K. Lewis. Pp. 92. 8*s*. 6*d*.

THE alterations in this edition appear to be few, and the book remains a concise account of classical local anæsthetic techniques. While the text may be useful to refresh the memory it is unlikely to be full enough for the serious student. The illustrations are still the book's weak spot: an essentially practical subject cannot be trusted to an amateur artist. In spite of all the efforts of the manufacturers of 'Nupercaine,' the author persists in freely using the term "percaine"—a practice which, by confusing percaine with procaine, has already cost a few lives. Mr. Molesworth is at his best in discussing, in the light of his own experience, the pros and cons of regional anæsthesia, and his opinions, coming as they do from an experienced surgeon, must command respect.

Inheritance of Hare-lip and Cleft Palate

POUL FOGH-ANDERSEN. Translated by Elisabeth Aagesen. Copenhagen: Arnold Busck. Pp. 266.

IN this comprehensive survey of Danish material, the author estimates the number of patients with hare-lip or cleft palate in Denmark to be about 4000, and the natal incidence to be 1·50 per thousand. He accepts hereditary disposition as an essential factor, but points out that only a relatively small number of the previous genetic studies of these conditions are of value in determining the mode of inheritance. From his own studies on 703 patients from the whole of Denmark, he concludes that there are two different malformations with no genetic connexion: (1) hare-lip with or without associated cleft palate, and (2) cleft palate occurring as an isolated malformation. The first is more common in males and the second in females. It was impossible to demonstrate with certainty any ætiological factor (such as geographical distribution, age of parents, or conditions of pregnancy) other than hereditary disposition. With both malformations he found that the incidence among relatives far exceeded the average incidence in the whole population; but while most cases of hare-lip (with or without cleft palate) must be assumed to be hereditary, many cases of isolated cleft palate seem to be non-hereditary. Analysis of the pedigrees showed that the most likely interpretation of the manner of inheritance of the hare-lip group was "conditioned dominance" with sex-limitation to males; while isolated cleft palate seemed to be inherited as a simple dominant "with failing manifestation and sex-limitation to females." Dr. Fogh-Andersen discusses the eugenic aspects of both conditions. He does not recommend induced abortion or sterilisation, but thinks that when the chances of hare-lip are high—that is, when one parent and one or more of the children have hare-lip—induced abortion should be agreed to if the parents are anxious for it. Though it does not deal in any detail with other possible factors, such as diet in the early months of pregnancy (which might possibly have a bearing on non-hereditary cases of cleft palate), the book is a valuable foundation for further study of the genetics of hare-lip and cleft palate in other countries.

Vitamins and Hormones

Vol. III. Editors: R. S. HARRIS, associate professor of nutritional biochemistry, Massachusetts Institute of Technology; K. V. THIMANN, associate professor of plant physiology, Harvard University. New York: Academic Press. Pp. 420. $6.50.

THE latest volume of this series maintains the high standard of the others. Any complete survey of this field has become wellnigh impossible, but this work contains well-balanced, critical reviews of special aspects. The contents are not restricted to American work, but include reviews by three British and two Palestinian investigators. Najjar and Barrett, and Daft and Sebrell review the activities of intestinal flora in human and animal nutrition. Thomas Moore discusses the interrelation of vitamins, and B. C. J. G. Knight growth factors in microbiology. A survey of the chemistry of anti-pernicious-anæmia substances of liver reads like a scientific "Edgar Wallace," though unfortunately the final clue still seems to be missing. The gonadotrophic hormones, the relation of acetylcholine to nerve activity, and possibilities in the realm of synthetic œstrogens are well discussed, the last by Professor Dodds, and in a review of outstanding merit on prenatal nutritional deficiency J. Warkany shows that malformations of the fœtus can be brought about by nutritional deficiencies alone, if they occur when tissues needing the deficient factor are in the process of differentiating.

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THE LANCET

LONDON: SATURDAY, JULY 27, 1946

The Cult of the Obsolete

DURING the great inter-war housing drive many improvements were introduced in the equipment of dwellings. Electric lighting became almost universal, and cooking by gas or electricity made headway in urban areas. Even solid-fuel stoves showed some advance in design beyond the rapacious kitchen range, and primitive types of water-heating found their way into a large number of homes. Nevertheless, these permanent dwellings were already obsolete in design and structure when they were built. The design belonged to a period when a house was conceived as a group of enclosed spaces called rooms, each of which could be independently heated by a fire. This presupposed the existence of a class of servants who carried coals and took away slops. In the homes of working people there were no servants; but this did not worry the builder. He merely retained the traditional design, reduced the number and size of the boxes called rooms, and continued to provide the massive fireplaces and chimneys of the larger houses. He just compressed the design and cheapened the structure without paying any serious attention to the needs of the user. The structure also remained faithful to tradition, and modern fittings were stowed away in any hole and corner. Little notice was taken of the needs or the comfort of those who had to live in the houses, and first cost always took precedence over efficiency and economy in maintenance.

Before the outbreak of the second world war our more expensive houses had begun to adopt many of the technical improvements in comfort conditions which had already become a commonplace in progressive countries. Central heating, abundant hot water, refrigerators, and even efficient insulation arrived hand in hand with modern kitchen and bathroom equipment. The invasion by comfort, however, was stoutly resisted in the older mansions; and it did not reach the houses built for the workers, whether under subsidy or otherwise. The domination of "practical" interests over life-needs was unassailable. During the war period the grim demands of the struggle put an end to house building, but at the same time stimulated magnificent technical achievements in the use of materials, construction, and equipment. The change-over from war to peace does not, as a recent circular from the Ministry of Health seems to suggest, necessitate the return to obsolete pre-war appliances and methods of construction in new permanent houses. On the contrary, it is clear that with effort and good will a large proportion of war-time technical advances are readily adaptable to peace-time uses without any time-lag. Many of the structural materials devised in war have immediate practical uses in the housing of today; much of the desirable equipment and many appliances are already on the production line. Scientists are eager to provide efficient substitutes for materials that are scarce. Heating and ventilating engineers are ready with new designs of appliances that will secure economy of fuel with increased efficiency and labour-saving to the housewife. The knowledge is ours; the necessary materials are within reach; but effort and good will are lacking.

Let us take a few examples at random. Some well-known insulating materials are admittedly scarce, but efficient substitutes can be produced in abundance; wall linings of low thermal capacity make for fuel economy and comfort. It costs no more to introduce technically sound plumbing, with good insulation of hot-water pipes, tanks, and cisterns, than to arrange festoons of pipes under the eaves where the first frost of winter will cause misery and perhaps lead to irretrievable damage. It is common knowledge that a hot-water cistern ought to hold at least 40 gallons, that its height should be three times as great as its diameter, and that it must be well lagged if it is to be efficient; yet in the houses of today hundreds of cubical cisterns with a capacity of 25 gallons are crawling unlagged into their dusty caves. The "heat service unit" devised for small houses by the engineers of the Ministry of Works and by some private firms is economical in material and production, efficient, and in the long run cheap for the tenant; yet antiquated open fireplaces and pathetically inefficient stoves are still going into new houses, like funeral processions during a plague. It is not as if alterations to conform with modern views could easily be made later—the heavy brickwork for obsolete flues has all the qualities of permanence. Domestic lighting by electricity has not kept pace with invention. With good lighting one should hardly be aware of the source of light, and there should be extensive diffusion with very little shadow. These requirements are well met by fluorescent tubes placed centrally close to the ceiling. Additional points are necessary for other uses, such as a table lamp or an electric iron, and of course provision should be made independently for the wireless set. It is technically a simple matter to standardise electric sockets while leaving scope for taste in their coverings; but legions of diverse sizes flood the market, to the mighty irritation of the housewife. It is the same story with innumerable other household fittings: standard specifications have been produced, and are available to all. They represent the best and the most efficient types that can be made, and they are constantly being adapted to new advances in the various crafts. But the demand for the obsolete continues unabated, and no authoritative body seems to be willing to impose any check. We know, for example, that the best type of water-closet pan is the siphonic, with the low-level cistern. Why do we not get them produced in mass in place of the inferior patterns that flood the market today?

These are casual illustrations of a wrong system—the extravagant production of obsolete housing materials and equipment, in the face of modern knowledge. It is nonsense to suggest that we must be content to wait for some undefined period before putting a stop to waste and inefficiency. Aircraft production in war did not cling to the past, or we should have lost the war. Yet there the difficulties of keeping up with technical advance were incomparably greater than with the simple materials for comfort in the home. Expense is not the hindrance. It is largely invincible ignorance and want of the will to do better.

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It would be idle to lay the blame on any one authority or group of persons—producer or consumer. We are all to blame.

Prospects in Poliomyelitis

LACK of epidemiological knowledge is not the only obstacle to an effective control of poliomyelitis. BURNET[1] maintains that we already know enough about this disease, in which undetectable carriers and mild for the most part undiagnosable infections far outnumber the obvious cases, to see that control is impracticable and that the only useful preventive measure is to prohibit tonsillectomy in times of epidemic prevalence. This is a pessimistic view but it is the carefully considered opinion of an acknowledged authority on virus diseases.

It is not customary for doctors openly to admit defeat. The practitioner often prescribes a placebo to give an anxious patient the impression that something useful is being done when in fact nature is being left to take her course. Routine disinfection, admittedly for the sake of appearances, is still an accepted part of public-health practice in dealing with some infectious diseases. DEENY and MACCORMACK,[2] who lately described in these columns the measures employed to deal with outbreaks of poliomyelitis in Eire, disarmingly made no claim that the scheme applied, which included quarantine of contacts, school closure, water chlorination, and destruction of flies, had any effect on the spread of the disease. They merely recorded that in their experience communities rendered anxious by the prevalence of poliomyelitis will submit to any scheme, however troublesome, provided there is a strong suggestion that it will afford protection. They expressed the opinion that the reassuring effect of such control measures "established their psychological worth." If, however, this was all that could be expected of them, their use would be barely justifiable.

Some of the measures advocated for the control of poliomyelitis need very careful consideration before they are applied on a large scale without more justification than that of the placebo. A committee of experts which recently advised[3] on poliomyelitis in boarding-schools was noticeably guarded in its attitude to the quarantine of contacts. Except in residential communities like boarding-schools, and in families of easy financial circumstances, quarantine measures are difficult to apply. There is no means of enforcing them and no solution to the problem of compensation for loss of earnings which at once arises when a quarantine of adult contacts is attempted in the ordinary household. Another measure which cannot be lightly undertaken is the closure of day-schools. This is more likely to limit spread in rural than in urban areas, where, unless local housing conditions are well above average, it is almost impossible to prevent the aggregation of children who are not attending school into groups affording excellent opportunities for the spread of a virus which is infective by casual contact. It was found in Australia in 1937 that the decline of an outbreak which began and reached a peak during school holidays was not interrupted when the day-schools reopened. It has been shown that the chlorination of water-supplies in a manner effective against bacterial pollution does not destroy the virus of poliomyelitis. The prevalence of poliomyelitis is not therefore of itself a good reason for precautionary chlorination of the water-supply; moreover, to prevent the spread of the virus by household utensils it is more logical to use boiling or steam sterilisation than chlorinated or other disinfectant rinses. Regarding the extensive use of D.D.T. for the destruction of flies in an attempt to control poliomyelitis it may be noted that a definite relation between flies infected by excreta or sewage and the spread of the disease among human beings has not yet been established. In this country there is often a high incidence of poliomyelitis during the late autumn and early winter when there are no flies about.

So there are grounds for the view that at present the chances of preventing poliomyelitis are remote, and that this tragic disease must be accepted as a risk inseparable from social life in human communities. But even the pessimist would not think it futile to probe still further into the epidemiology—to seek, for instance, a satisfactory explanation of the well-marked seasonal incidence of poliomyelitis. The prospects are perhaps better in the field of immunology, and it seems reasonable to forecast that the disease will in the end be robbed of its virulence if not of its powers of spread.

1. Burnet, F. M. *State of Victoria, Dept. of Health Bulletin*, Jan.–June, 1945.
2. Deeny, J., MacCormack, J. D. *Lancet*, July 6, 1946, p. 8.
3. *Ibid*, 1946, i, 972.

Genetic Effects of Atom Bombs

IN the atom bombs which exploded a few hundred metres above Hiroshima and Nagasaki, a kilogramme or so of uranium 235 or plutonium 239 underwent fission, with the production of about 10^{21} ergs of energy. Part of this energy was expended in the blast which caused the material damage to buildings, part was dissipated as hot air, and an appreciable proportion was emitted as radiation. The radiation which reached the ground comprised (*a*) visible, infra-red, and ultraviolet light, resembling sunlight but of much higher intensity, (*b*) neutrons, and (*c*) gamma rays resembling the penetrating rays used in radium therapy or supervoltage X-ray therapy. The visible and near-visible light produced burns on the unprotected skin of people exposed to the flash, but since such radiation is not penetrating it does not directly damage deeper tissues. Neutrons and gamma rays are capable of penetrating to all parts of the body, and substantial thicknesses of building material are required to protect against them. According to the official report,[1] injuries due to penetrating radiation should mainly be ascribed to gamma rays rather than neutrons. The gamma-ray emission from the bomb was perhaps equivalent to 10^{11} curie-hours of radium, and appears to have produced at the ground a dose of the order of 1000 r at one kilometre from the centre of damage, and 10 r at three kilometres. Injuries suffered by people exposed to the gamma rays, as described in the official report, include damage to the hæmopoietic system resulting in anæmia, and damage to reproductive organs shown by reduction in sperm counts and miscarriages in pregnant women. All these types of injury were

1. Effects of the Atomic Bombs at Hiroshima and Nagasaki. London. 1946. See *Lancet*, July 6, 1946, p. 14.

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to be anticipated from existing knowledge of the action of X rays and gamma rays.

In addition to these injuries, which became apparent within a few days or at most a few months after the bombing, other harmful effects are to be anticipated which will appear only in later generations. These are genetic changes, induced by the radiation in the germ cells of survivors and handed on to their offspring. A discussion at the British Institute of Radiology in May,[2] with Prof. J. B. S. HALDANE, F.R.S., in the chair, made it clear that, while the production of mutations by radiation in man has not been demonstrated, there is no reason to doubt that it can occur. There is evidence that radiation induces mutation in a considerable number of plant and animal species, including mice. Two principal types are recognised—gene mutation and chromosome mutation. The former involves no detectable change in the microscopical appearance of the chromosomes and is presumed to be due to internal change in a gene; the latter involves rearrangement of existing genes by, for example, an exchange of segments between two chromosomes, and may be detectable microscopically. The commonest radiation-induced mutations in mice are of the chromosome type and their effect is to cause hereditary partial sterility. When a male or female mouse has been irradiated with neutrons or X rays in a dosage of a few hundred röntgens, some of its offspring will consistently produce small litters. About half the members of these small litters, when reared and mated to normal mice, will in turn give rise to small litters, and so on, the effect being transmitted to about half the offspring in each generation. The small litter size is due to a proportion of the fertilised eggs dying, either before implantation in the uterus or as embryos in the uterus. If this effect exists with human beings, it may show itself as a hereditary tendency to miscarriage.

This hereditary partial sterility is produced when mature sperm are irradiated, but the effect on immature sperm is much slighter, so the maximum degree of chromosome mutation is obtained only if mating takes place within a few days of irradiation. Gene mutations, on the other hand, are produced about as readily in immature as in mature germ cells; consequently the offspring conceived of one of the parents at any time after irradiation may be expected to carry mutant genes. Offspring which receive a mutant gene from one parent will usually receive the corresponding gene in the normal form from the other parent, and since mutant genes are often recessive to the normal type the effect of the mutant gene is concealed. Eventually, after a greater or lesser number of generations (depending on the degree of inbreeding, but possibly of the order of a hundred generations), a conception may occur in which both egg and sperm contribute the same mutant gene, and the mutation will then show itself in the resulting organism. Thus a considerable time is likely to elapse between the production of a recessive mutation and the appearance of a visibly abnormal person. Mutants which are not recessive to the normal type (and this is the case with many of the known human mutants), and mutant genes carried in the sex chromosomes, will show up in the offspring of irradiated people and will not remain hidden for many generations.

The vast majority of mutations are deleterious, and the production of mutations is undoubtedly to be included among the harmful effects of the atom bomb. To assess the magnitude of the effect is, however, only possible if one is prepared to make guesses which while plausible may be wrong. The mutation-rate in experimental material is of the order of 3×10^{-8} per gene per röntgen. The spontaneous rate of mutation in man in the case of two known mutations is about 10^{-5} per gene per generation, or say 4×10^{-7} per gene per year. Thus a dose of about 10 r probably produces as many mutations as occur spontaneously in a year, and in the germ cells of the survivors of the atom bomb as many mutations were probably produced as would arise spontaneously in several years. Considerations of this kind are also relevant in planning peace-time applications of atomic energy which might involve greater numbers of people than have hitherto run the risk of exposure to radiation.[3] It is now thought that X-ray and radium workers can tolerate about 1 r per week without injury to health. So long as only a minute fraction of the whole population is exposed to radiation, doses of this order will not increase the mutation-rate in the population as a whole by any significant proportion. But if developments in nuclear physics lead to a considerable fraction of the population running the risk of exposure to radiation, it will be necessary to reduce the "tolerance" dose much below that figure. If, for example, the whole population were exposed to 1 r per week, then the mutation-rate would probably be increased several fold above the spontaneous rate, resulting eventually in a great increase in hereditary abnormalities. Fortunately the authorities are alive to these dangers and to the necessity for obtaining further information on the production of hereditary changes by radiation in mammals.[4]

B.C.G.

ON July 17 a deputation from the Tuberculosis Association, the Joint Tuberculosis Council, and the National Association for the Prevention of Tuberculosis went to the Ministry of Health to present the memorandum by Prof. W. H. Tytler, which we summarise on p. 138. They asked that B.C.G. vaccine should be made available for trial in this country. Sir Wilson Jameson, chief medical officer of the Ministry, who received the deputation with sympathy, indicated his willingness to see whether suitable vaccine can be provided. To determine its use, and the class of persons to be immunised, it would, he thought, be necessary to appoint an expert committee.

2. *Nature, Lond.* 1946, 157, 738.

3. Wiesner, B. P. *Lancet*, 1946, i, 33; Walker, K. M. *Ibid*, p. 69.
4. Dale, H. H. *Ibid*, p. 399.

"... If there is a valid criticism to be made of the Civil Service at the present time, it is that it does not always fully appreciate the point of view of the public and does not always have that sense of urgency which we would wish it to have. The obvious remedy is to recruit civil servants from men who have been at the receiving end of Ministry letters. They will, then, have a different outlook and a greater sense of urgency. . . . We are no longer under the kind of system in which the Civil Service first developed, in which its chief rôle was to stop other people from doing things. The Civil Service is increasingly having a planned and positive rôle to play, and we may need to go much further than we have done during the war in bringing in men of business, scientific, and technical experience of every kind."—Mr. H. D. HUGHES in the House of Commons on June 21.

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Annotations

BRAN AS FOOD FOR MAN

THE so-called competition of man and animals for food has been one of the nutritional controversies of the war. The subject of debate is whether certain cereals are most advantageously and economically consumed by man directly or after animals have converted them into protein and fat. The question has a qualitative and a quantitative aspect—it is concerned particularly with the quantity of energy and the quality as well as the quantity of protein obtained in the two ways. If the diet contains a moderate variety of foodstuffs, the quality of the protein in one of them is not of great importance, so it is primarily on the quantity of energy obtainable that opinions differ.

At first sight one would think there must be less waste if the food goes straight to man without being first put through another organism, but the animals in question are ruminants whose interiors treat the food in a way totally different from man's, and the foodstuff in question is the wheat grain which the modern miller can fractionate in an indefinite number of ways to yield products of different nutritive value. The argument is not about the finer fractions of the wheat grain—these by general agreement go to man—but about the destiny of the coarse fractions. Only in an emergency such as the present would most nutritionists insist on giving the coarse bran to man, since he does not digest a large part of it whereas the ruminant can use much more for the peculiar fermentative activities which are promoted by micro-organisms in its alimentary canal.

Several valuable inquiries[1] were made during the war into the ability of the human subject to digest bread baked from flour containing various proportions of the wheat grain, and satisfactory answers, based on scientific fact, were obtained; but the coarse bran, as a separate fraction, did not lend itself to such studies, nor was the project of diverting it from cattle to human beings seriously considered in this country until the world famine in cereals became acute. The digestibility of the coarse bran has now been worked out (p. 119) by Mr. R. G. Booth, PH.D., and Mr. T. Moran, D.SC., of the Cereals Research Station at St. Albans, which during the war was in the charge of the Ministry of Food but has since reverted to its original owners, the Research Association of British Flour Millers. They have calculated the digestibility of the bran from the results of the war-time trials already referred to, and have also made experiments in vitro in which cooked and cleaned bran was subjected to treatments planned to imitate as faithfully as possible the processes of salivary, acid gastric, and alkaline intestinal digestion in man. The proportion of solids removed from the coarse bran by human digestion was found to be 40% by calculation and 34% by experiment—values near enough to support one another. It was noted that the cells of the aleurone layer of the bran were emptied by the process of digestion in vitro. The aleurone layer, of which the protein is thought to have especially high nutritive value, adheres so firmly to the bran that it is not removed by any ordinary milling process, and if it is desired that man shall receive it he must receive also the coarse bran to which it is attached. In any but an excessively restricted diet, however, it is not of prime nutritional importance that man should receive the protein of the aleurone layer.

From the figures thus obtained for the digestibility of the coarse bran, Dr. Booth and Dr. Moran have computed the yield from 100 g. of bran to be 118 calories as milk from the cow, or 140 calories as food direct to man. Several complicating factors in human economy and animal husbandry have to be considered, but the balance seems clearly in favour of giving the bran directly to the human population in a famine emergency. The investigations "provide evidence that, where calories are the only concern, the optimal extraction of wheat" (for man, of course) "is 100%." Nevertheless the calories supplied by a loaf of given weight fall as the percentage extraction of the flour used rises, chiefly owing to the decreasing digestibility of the flour but partly also because of the increasing water content of the loaf. Thus a rise in the extraction-rate from 80% to 90% is accompanied by a fall of 6% in the available calories supplied by a loaf of given weight made from it. Happily, in times other than those of acute food stringency, the main consideration is not that of securing the maximum yield of calories, to which the present study of Dr. Booth and Dr. Moran is essentially dedicated.

1. Macrae, T. F., Hutchinson, J. C. D., Irwin, J. O., Bacon, J. S. D., McDougall, E. I. *J. Hyg., Camb.* 1942, **42**, 423. McCance, R. A., Widdowson, E. M., Moran, T., Pringle, W. J. S., Macrae, T. F. *Biochem. J.* 1945, **39**, 213.

FORM AND FUNCTION

IN the third of a series of open lectures on subjects of wide scientific interest arranged by the Edinburgh Postgraduate Board for Medicine, Dr. Robert Walmsley on May 28 discussed the biological correlation between human form and function. A simple anatomical example of this correlation is the factors concerned in keeping the patella in place during extension of the knee-joint. In considering the variations that occur in total body form Dr. Walmsley outlined the many classifications which have attempted to correlate body groups with definite functional and clinical entities. Thus Hippocrates recognised two basic types of body form which he called "habitus apoplecticus" and "habitus phthisicus." Halle in 1797 introduced his digestive, muscular, and cerebral groups, and new names were added by successive workers in this field, many of which, however, were based on visual impressions according to whether the subject was fat, muscular, or thin. The relationship between physical traits and susceptibility to disease was studied by Draper in New York who tried to establish disease types by building outwards from the clinical evidence of certain diseases to the physical make-up of those who suffered from them; thus he came to recognise gall-bladder and gastric-ulcer types. Other workers, notably Kretschmer, tried to correlate body build with non-organic mental disease.

It soon became clear that the classification of body build according to anthropological measurements could provide only a series of mathematical indices which conveyed little to physicians who wanted a satisfactory description of the body types they knew from clinical experience. The work of Sheldon, of Harvard, from 1930 onwards has provided a scientific method of classifying 100% of healthy mankind. Sheldon introduced a numerical scale in which the make-up of the whole body could be expressed by three numerals, each of which represented the degree of development from the three primary germ layers—endoderm, mesoderm, and ectoderm. The maximal numeral assigned to any one germ layer derivative was chosen as 7 and the minimum as 1. In this way it is possible to define three main groups of body builds or somatotypes, and all the many intermediate types can be expressed by this simple notation. Thus, somatotype 711 is the extreme endomorph with all the physical and mental characteristics that go with an overwhelming predominance of the alimentary viscera; these are the Mr. Pickwicks of everyday life. Somatotype 171 is the extreme mesomorph, with emphasis on muscular and bony development, and 117 represents the extreme ectomorph in whom the central nervous system predominates in a body which has poorly developed digestive and skeletal apparatus. Sheldon has so far isolated and described some 76 somatotypes out of 343 theoretical possibilities, and has postulated three tem-

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peramental components, viscerotonia, somatonia, and cerebrotonia, which correspond to the three main body types. The relationship between the different somatotypes and carefully assessed and established bodily disease provides a fruitful field for research. But if this study is to attain the dignity of a science full consideration must be given to every environmental factor, both physical and socio-economic.

AVOIDABLE CANCER

THOUGH cancer of the scrotum contributes less than 8% of the deaths caused annually by cancer of the skin, there were 1335 scrotal cancers out of 3333 notified cases of occupational skin cancer between 1920 and 1943. More than half of these (793) occurred among cotton mule spinners who come into contact with mineral lubricating-oil. The remainder of the 3333 cases were distributed over a wide variety of trades falling naturally into two main groups, in one of which there is contact with pitch, tar, and bitumen and in the other with shale and mineral oils. That this is not the whole story of carcinogenic agents and occupation is indicated by Henry's prodigious investigations [1] of the occupational histories of people whose deaths were notified to the Registrar-General as caused by cancer of the scrotum. He gives his results in a table which lists 101 separate occupations, together with proved or suspected carcinogens such as mineral oil, tar, pitch, soot, creosote, arsenic, and "heat with radiations." The estimated incidence in the populations at risk shows that scrotal cancer is highest in chimney sweeps; then come patent fuel workers, cotton mule spinners, textile spinners, and tar distillery workers, in that order. Surprising information is obtained when a case is fully investigated. "It was naturally interesting," writes Henry, "to expose the parish clerk as a gasworks stoker; the mineral-water manufacturer, the traveller in vinegar, and the musician as cotton mule spinners . . . the grocer as a patent fuel worker . . . the general labourer as a chimney sweep; these discoveries giving the answer to the problem." But he experienced even greater interest and a healthy feeling of frustration when he found that the fish porter was a conjuror, the cotton warehouseman a pugilist, and a painter an ex-acrobat—revelations which threw no light on the problem. It was not until the inquiry was under way that he began to appreciate fully the possibilities of medicinal treatment (e.g., by arsenic) as a cause of cancer, and he hopes that others will follow up this line of investigation.

Henry admits that the best method of preventing scrotal cancer is to use a non-carcinogenic material in industry instead of a carcinogenic one, but unfortunately he emphasises the practical difficulties of choosing the correct oil and of obtaining enough of it. Presumably there are shipping and other difficulties at present, but we wish he had thrown official caution to the wind and come down heavily for the prohibition of mineral oil as a lubricant for cotton mule spinning-machines. These machines used to be lubricated with sperm and neatsfoot oils, and it was only after the introduction of mineral oils that cases of mule-spinners' cancer began to appear. It is hard to believe that such a simple preventive measure as the use of non-carcinogenic oils could not be adopted. As far as is known vegetable oils are not carcinogenic, and in normal times they are not scarce, though possibly they are more costly than mineral oils. There is greater difficulty in controlling the dusts of tar and pitch, and for many purposes substitutes cannot be found.

It is odd that the products of coal and petrol which have lain under the earth for centuries should have carcinogenic properties whereas products of living plants have not. Henry looks back to the time of Pott, and the discovery of chimney sweeps' cancer; and he wishes for a magic carpet to take us back 200 years to find out what was the incidence of scrotal cancer in those days, and forward to the time when the deposits of coal and petrol have been consumed, to see whether there will still be scrotal cancers. He ends with an apt quotation from George Moore: "In two hundred years there will be fields where today there are cinder heaps. . . . But coal and petrol are not endless even in America; and as soon as both are among the gone, the world will start on a new race again."

1. Henry, S. A. Cancer of the Scrotum in Relation to Occupation. London: Oxford University Press. Pp. 112. 15s.

MILK INDUSTRIES COMPARED

THE mission that has been studying milk-production in North America [1] says that there, as here, the milk industry is largely based on the family farm carrying 15–30 milking cows; and economists hold that larger units are not inherently more efficient. By trade-union standards the family is grossly overworked, and the hired farm-worker receives only about half the reward of the milk roundsman, although his work is certainly more exacting and more skilled. In general, the pastures are inferior to those in Britain, but maize-corn and lucerne are important fodder-crops which might have more attention in this country. In most of the Eastern States nearly all the farms have electrical equipment, and the mission thinks that a supply of electricity would provide the greatest single improvement on our dairy-farms. (On many of them, however, a proper water-supply is needed more.) Steam sterilisation of utensils and milking machines is less common than in Great Britain: chlorine disinfectants and lye solution (0·5% NaOH) are used, and special attention is paid to cooling of milk which is done by standing churns in cooling tanks. In addition, all milk is pasteurised when it reaches the depots. The health authorities are finally responsible for hygienic standards, but much of the milk-testing is done by the large dairy firms. Milking-parlours are still in the experimental stage. The price of milk is related to its butter-fat content and "Golden Guernsey milk" brings a higher return to the producer. The mission strongly recommends that a similar scheme, or one related to the total solids, should be introduced in Great Britain; but otherwise they believe that the milk-contract system in this country is much superior to those in America. In a land of domestic refrigerators milk may be delivered only once every two days, and much of it is bought from shops in cartons.

The report shows that production of milk is probably more efficient than it is here. The average annual yield of cows is about 100 gallons (approximately 15%) higher than in Britain and replacement costs are lower. The higher yield has been largely achieved by using Holstein Friesian cattle, which give the best return even though payment is made on a butter-fat basis, and by a more consistent policy of breeding for high milk-production. Long-term experiments at Beltsville are indicating that the use of proven sires (known to throw heifers giving high yields) is as effective as intricate line-breeding programmes for raising milk-yields, and artificial insemination enables the best use to be made of proven bulls. The mission advocates further breeding research in this country and more use of artificial insemination in order to develop single-purpose dairy animals. In his classical work on breeding dairy cattle, however, Prentice [2] emphasised that the beef qualities of dairy cows may, under certain conditions, be an important factor in the economics of dairying, and the Shorthorn is still widely used in the less intensive dairying districts

1. Agriculture Overseas. Report no. 1: Milk in North America. H.M. Stationery Office. 1946. Pp. 64. 1s. 3d.
2. Prentice, E. P. American Dairy Cattle. New York and London. 1942. Pp. 453.

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both of the United States and Britain. Of the dairy breeds, the Friesian provides by far the best carcass, which gives it an additional advantage over the other types.

Beyond noting the very low incidence of tuberculosis in North America and advocating a more vigorous policy of control, including area eradication, in Britain, the mission produces little evidence to show why replacement costs are lower than in this country. The control of contagious abortion is probably more effective across the Atlantic, but there is no panel scheme comparable to that in Britain. One might add that foot-and-mouth disease does not exist; and Texas fever, a protozoan infection which at one time threatened to destroy the cattle industry, has been controlled. It appears from the report that milk-production in North America is rather more efficient than in Great Britain because of a more consistent breeding policy, helped by long-term research, and smaller losses from disease, partly due to geographical isolation, but also again to research and disease-control. It is noteworthy that ever since its formation half a century ago the Bureau of Animal Industry in the U.S.A. has been fortunate in choosing a series of particularly able veterinarians to direct its work.

WORK FOR THE TUBERCULOUS

REABLEMENT is treatment of the patient, as opposed to treatment of the disease. Dr. C. K. Cullen [1] accepts the view that it should start as soon as the patient comes under care, and points out that he not only must be occupied and diverted but also should know what it is all about. After the early stage of complete rest —and the need for rest must be explained to him—he should be given some diversional handicraft; but "it must be made clear to him that this is just a temporary hobby and that we are not expecting him to earn his living on discharge by selling fancy mats or basket work." When he improves and reaches the workshops he should be encouraged to have confidence combined with caution, and the psychological effects of a setback must be counteracted by explanation and fresh encouragement. All this may seem mere common sense, but Dr. Cullen finds it disturbing that many sanatoria are still a long way behind in its application, while a few "are still places for human vegetation."

When the patient is fit to leave the sanatorium it has to be decided whether he can return to work, and if so what work; and often what would be best for him must be over-ruled by what necessity forces on him. This is the main problem for the tuberculous, and we have at last begun to tackle it on a national basis; but economic necessity remains the driving force under which 40–50% of patients go back to their old jobs. It is demoralising to lead less than a normal life, and Dr. Cullen believes that if patients are at all fit for it they should re-enter employment as soon as possible, provided they go to bed early in the first few months. Often, however, the work they return to is unsuitable, and about a third of those who return to their old jobs break down again. He estimates that of patients discharged from sanatoria, about a third are quiescent and can go back to normal work, about a fifth are unfit for any kind of work, and the rest need sheltered work under supervision. The progress of this last group depends on their conditions of life and work; they provide most of the "breakdowns" under present conditions. The old idea that tuberculous people need open-air work has been given up, for most open-air jobs are heavy, and the English climate is treacherous. They need indoor jobs in a well-ventilated, dustless atmosphere, without strain, or long journeys to and fro. Colonies and settlements, like Papworth, may be highly successful, but some have failed through inability to find enough capital at the outset. In any case the family has to uproot itself from its old connexions when a patient joins a colony. Ex-patients can often be employed as sanatorium staff, but this too offers difficulties for the man with a family. Dr. Cullen believes the sheltered workshop, offering employment to the man living at home, is the most useful agency for reablement. The experience of the Altro workshop in New York shows what a high survival-rate can be achieved among the tuberculous if they are started off under favourable working conditions; on following cases for ten years it was found that 87% of the minimal cases, 86% of the moderately advanced, and 63% of the far advanced were still alive; for those over 55 the mortality-rate was the same as for the general population.

Many of the "good chronics" in whom the sputum is occasionally or regularly positive could take jobs in industry if proper hygienic precautions in canteen and workroom were enforced—and these should be general whether tuberculous patients are employed or not. Municipal authorities especially have many posts which the tuberculous could fill. For more advanced chronic cases he thinks we need sheltered workshops, either as sections of factories or as separate ventures. Many patients will "graduate" (as they do from the Altro workshops) from these sheltered conditions to the open labour market. It may also be possible to establish day sanatoria and night sanatoria comparable to those of the Soviet Union—or at least to provide special rest rooms in sheltered workshops and factories. He notes the special needs of the housewife who at present gets no financial benefit except 10*s*. a week towards household help if she is unable to work. No house can be kept clean for that sum in these days. Finally, he is anxious to see a great improvement in the environment to which the patient must return. "How often do we see a patient steadily improve and then go back to conditions of housing, food, restricted recreation and unsuitable work which knock him down again . . . ?"

1. Back to Life and Work: Rehabilitation of the Tuberculous. Published by the National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock Square, London, W.C.1. Pp. 16. 2*d*.

NUTRITION IN THE WEST INDIES

THE call for planned intensive cultivation is nowhere greater than in the British West Indies, which, with its dense and still-growing population, relies on imports for nearly all its wheat and rice and still finds it hard to support its inhabitants. Barbados, for example, with a density of 1226 persons to the square mile, has a birth-rate of 29·13 and a death-rate of 16·42; Trinidad has a birth-rate of 39·95 and a death-rate of 15·55, and for Jamaica the figures are 31·15 and 14·0. Whereas in an island like Malta the problem has been partly solved by emigration, no such solution offers itself to West Indians. Dr. Platt's study of nutrition in the area [1] is therefore all the more important. Among the disorders he observed in hospital populations were œdema, pellagra, extreme anæmia, keratomalacia, and riboflavine deficiency. Employers complained that labourers were inefficient and worked no harder than they must to earn a bare subsistence. But it has been found, at least in Trinidad, that the length of the working day is limited by fatigue, and Dr. Platt attributes this to under-nourishment. He estimates that the average calorie-intake is about 2400–2500, with deficiency in the B_2 vitamins (especially riboflavine), calcium, and protein. His first recommendation is therefore the adoption of an 80%-extraction flour "ennobled" by the addition of up to 3% food yeast, a calcium salt, and possibly also iron. Importation of skimmed milk should be extended, particularly among priority groups such as school-children, and increased production of pulses and ground-

1. Nutrition in the British West Indies. B. S. Platt, C.M.G., M.SC., PH.D., M.B. (Human Nutrition Research Unit, Medical Research Council.) H.M. Stationery Office. Pp. 38. 9*d*.

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nuts is proposed as providing valuable sources of B_2 vitamins and of protein (approximately 100 g. per lb.) and containing useful amounts of calcium and iron. Green leafy vegetables should be more widely consumed since they contain essential amino-acids, vitamin-A precursors, and some of the B vitamins.

Since some diets are far below the average, Dr. Platt advises that more equal distribution of food should be promoted by price control and collective feeding. The immediate objective suggested in his report is a diet yielding 2500 calories, and containing 60 g. protein; but he points out that even on such a diet full physiological efficiency will not be attained. A long-term policy will include the growth of improved varieties of crops, the proper use of fertilisers, and the concentration of cropping in the best growing season. (Strangely enough, no mention is made of the possibilities of fish and other sea foods as sources of the protein that the islanders need.) According to a statement by the Secretary of State for the Colonies on July 3, action on the report may shortly be expected. Efforts are being made to obtain "ennobled" flour from Canada; trials of feeding children with skimmed milk and food yeast are proceeding; and a nutrition working party seems likely to be formed.

THE CHILD WITHOUT A HOME

THE child deprived of a normal home life finds his worst trouble in the fact that he belongs to nobody. Lady Allen of Hurtwood, in a memorandum on the evidence she gave last year to the Curtis Committee on the care of children, suggests that all children who lose their legal guardians should, either temporarily or throughout childhood, become wards of the State, by order of a court, and that the State should be responsible for their proper care and upbringing. Every such ward should have a personal trustee to look after his interests and administer his property if he has any. Trustees would have access to their wards whenever they liked, and would be free to select, with the help of the observation centres which have been foreshadowed, the kind of care most suited to the needs of the child, and to transfer him if it seemed that he would benefit by a change. Each trustee would be responsible for a number of children—she suggests 150 as a suitable number. She shares the view of the Curtis Committee that the child, before being placed, should be under skilled observation in one of the centres mentioned, so that the chances of his getting into an unsuitable environment will be much reduced. The great thing, as she points out, is to get every child absorbed into the full life of the community; and the best method, of course, is by adoption. A good and reliable foster-home comes next, but has the drawback that the child cannot be certain his place in it will be permanent. The small home with 8–10 children of mixed ages, with a married couple in charge, can be very successful, and Lady Allen suggests a promising variant of this in one of her footnotes: a married couple, presumably without children of their own, could be invited to act as foster-parents to a group of children, being suitably paid for doing so; each year they would take on a baby, so that in time they would have a family of 6–8 children of ages similar to those found in an ordinary family, and would bring them up until they were settled in life. This sounds a thoroughly good plan, likely to give the children the security of ordinary home life, and to be a pleasure to the foster-parents if they are of the natural parental type.

She objects cogently to grouped cottage homes that they do not make the children part of the ordinary community: the "mothers" are often childless widows or spinsters, the sexes are segregated, some 15–25 children occupy one cottage, often grouped according to age, and often they attend school within the community. It is hard, as she says, to imagine anything less like a family group. Some children would benefit by education in boarding-schools of good type, provided they could be given a free family life during the holidays. To achieve this, each child, she thinks, might have a guardian who would act as a personal friend, welcome him into his home for the holidays, and help to launch him into the world. These part-time guardians would come from all levels of society, and would be selected by the child's trustee in consultation with the school. They might be helped with maintenance grants during the school holidays. The child would thus have the sense of "belonging" to someone outside school.

Lady Allen suggests that the entire maintenance cost of the child who becomes a ward of the State should be borne by the taxpayer, and that only one Government department—preferably the Ministry of Education—should have charge of him, though certain duties might be delegated to other departments or to local authorities. Her well-considered proposals would do much to give the child who loses his home the place in the community which counts so much in normal development, and of which he is at present so often deprived.

DENTAL BENEFITS OF WAR

IT is an alluring and consolatory notion that war reduces the incidence of dental caries by imposing a diet comparable with that on which primitive man developed perfect teeth. But is it correct and as simple as all that? At a meeting of the Norwegian Medical Society, reported in *Nordisk Medisin* for June 7, Dr. A. Collett pointed out that the incidence of dental caries in the larger Norwegian towns had begun to fall shortly before the late war, during which this fall was greatly enhanced. Early in 1938 the Norwegian Society for the Prevention of Dental Diseases started an intensive propaganda against denatured carbohydrates and on behalf of other dietetic reforms; and it was in 1938 that the decline in dental caries began. Dr. Collett linked the reduction in dental caries during the war with the monotonous diet, low in calories and in fruit and vegetables. In the same period toothbrushes and dental pastes became scarce, and the growth and weight-increase of Oslo school-children showed a well-marked decline. The consumption of sugar fell from 87 to 30 g. per day per head, and sweets were unobtainable. In Dr. Collett's opinion the relationship of dental caries to food is quite plain, and he quotes Göthe with approbation as saying: "It irritates people that truth is so simple." At the same meeting Dr. T. Gythfeldt, senior school dentist in Oslo, declined to regard the problem of dental caries as practically solved. He pointed out that between 1936 and 1940 there was a considerable rise in the consumption of sugar and chocolate, and yet the incidence of dental caries fell sharply in the same period. Again, though the incidence of caries has also declined in Sweden, that country had plenty of chocolate throughout the war, and its consumption of sugar per head was higher than that of Norway before the war. In Norway since 1940 there was a remarkable decrease not only in the consumption of sugar and chocolate but also in that of meat, vegetables, fruit, cheese, and butter. On the other hand, the consumption of fish and cod-liver oil rose, and a greater use was made of calcium and vitamin preparations. "Before the war," said Dr. Gythfeldt, "there was a steady rise in the use of milk, milk products, fruit, vegetables, and cod-liver oil. During the war we have advocated calcium and vitamin preparations. Children's teeth are better not because of the war but in spite of the war." The explanation may yet be forthcoming, for the Norwegian Society for the Prevention of Dental Diseases has offered a prize for the best investigation into the causes of the decline of dental caries during the war.

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Parliament

ON THE FLOOR OF THE HOUSE

THERE were two clashes of party in the House last week—on broadcasting policy and on the rationing of bread. Probably nobody is wholly satisfied with the present arrangements for broadcasting, but it would be difficult to explore the alternatives thoroughly before the B.B.C.'s charter falls to be renewed. Sponsored broadcasting—in which music is interspersed with advice to take the famous X pills for constipation or to go to the Y holiday camp—commands little support; but competition between regions, and the increase of small-range radio stations (though not, as in the U.S.A., on a commercial basis), has much to recommend it. In America some of the State universities have radio transmitters of their own. Why not here? There are in fact possibilities of more specialised broadcasting as well as more local broadcasting. At least one station might pay special attention to scientific research.

Mr. Strachey says he must have bread-rationing because he cannot count on getting supplies from this year's Canadian harvest in September. Mr. Churchill and Mr. Hudson, having more freedom and less responsibility, say he could get them. We must wait and see. We may be sure, however, of one thing—our rations will be maintained at their present satisfactory level, and in variety they will be improved.

The most important political statement of the week was that made by members of the recent mission to India—Sir Stafford Cripps in the Commons and Lord Pethick-Lawrence in the Lords. It has been the goal of policy of one Government after another that India should one day attain her freedom, and now she has the opportunity of doing so. Elections of the constituent assembly, in which that issue will be decided, are taking place. What tie, if any, she will choose to make with the United Kingdom remains to be seen, but Pandit Nehru, new leader of the Indian Congress, has said there will be a treaty.

As the great nations move to new relations with each other, and the numerous organs of UNO emerge from the chrysalis stage—including the World Health Organisation—the picture is becoming clearer. The ideals born in the stress of war are being, at least to some extent, realised.

MEDICUS, M.P.

NATIONAL HEALTH SERVICE BILL

THE REPORT STAGE

ON July 22 and 23 a committee of the whole House considered amendments to the Bill made during the twenty days on which the standing committee met.

After Mr. C. W. KEY, parliamentary secretary to the Ministry of Health, had moved an amendment to clause 16 giving hospital management committees power to carry out research, Sir ALAN HERBERT expressed regret that the amendments about research and teaching put down at the request of the vice-chancellors and the medical faculties of the universities of Oxford and Cambridge had not been called. The universities did not of course object to the regional boards and the hospital management committees having these powers, but as the expert authority on research and teaching they felt that there should be a different arrangement with the teaching hospitals. Between the university and the teaching hospital, they envisaged a working partnership in which the hospital would run its own affairs without interference, but the university would have the primary say in research.

Mr. KEY moved further amendments to secure that health centres provided by local health authorities might be used for specialist and other purposes connected with outpatient work, and providing for the payment of loss of remunerative time to members of the Central Health Services Council, advisory committees, regional boards, and hospital management committees.

TILL THE APPOINTED DAY

Commander J. F. W. MAITLAND moved the following new clause providing for the maintenance of hospitals before transfer:

(1) At any time after a regional hospital board has been constituted, the governing body of any voluntary hospital in the area of that board may represent to the board that it is unable to maintain the existing services of that hospital out of its income without financial assistance, and the board, after such inquiry as it thinks necessary, shall determine whether such financial assistance is required, and shall pay to the governing body such sums, if any, as it shall find to be necessary for the said purpose.

(2) If any regional hospital board is satisfied that the services rendered by any hospital ought immediately to be expanded or developed, the board may make such payment as it may think fit to the governing body or local authority concerned subject to such conditions as it may determine.

If he might say so without offence, Commander Maitland said that when faced with the interim difficulties of the hospitals the Minister seemed to change from a tiger to a barnyard hen and clucked that there were difficulties but he hoped that the voluntary organisations would go on. But surely a Minister was there to solve difficulties, and in this clause they sought to place in his hands the power and on his shoulders the responsibility to see that where need existed no hospital should be prevented by lack of money from maintaining its efficiency. In committee the Minister had resisted appeals for the delegation of power with the argument that his was the responsibility and his must be the power. But the reverse was also true, and where power rested it was important that responsibility should also rest. Uncertainty was often the father of inefficiency, and this clause sought to remove uncertainty from the minds of those responsible for the management of voluntary hospitals today. It always paid to tell the British people exactly where they stood, and if the Minister accepted this clause he did not think voluntary subscriptions would fall off in the interim period.

Mr. ANEURIN BEVAN, Minister of Health, admitted that he shared the anxieties of the movers of the clause, but the committees of the voluntary hospitals today were in many respects self-appointed bodies. How could he give a blank cheque to self-appointed people? The voluntary hospitals should maintain their exertions in the interim period and if they found it impossible to carry on they should come to him. The regional boards were not the bodies to deal with the difficulties of the hospitals during the intervening period, and he could not put this additional task on them. The Government could not take over responsibility for the voluntary hospitals before they had taken over their management. Sir HENRY MORRIS-JONES asked whether the Minister had power under the Bill to make payments to the hospitals who appealed to him, but Mr. BEVAN said this was unnecessary.

Sir HUGH LUCAS-TOOTH pointed out that hospital governors might be unwilling to dip into their capital funds during the interregnum and thus diminish their endowments. Mr. DAVID ECCLES suggested that the Minister was not perhaps particularly interested in the amount of pin-money the hospitals would receive when the State system came in. Mr. BEVAN, in reply, stated that he was informed that he had power, and the county had power, to help a hospital which got into difficulties. The Government's generosity was now being used as a cause of complaint against the Government. He could have taken the whole of the hospital endowments and now members were complaining that in the intervening period hospitals might be asked to use this money for the reasons for which it was given. The bulk of subscriptions came from the working-class and they would maintain their contributions.

Mr. J. S. C. REID pressed the Minister to state not only his good intentions but also precisely how he was empowered to help these hospitals. Mr. BEVAN said that there were a variety of powers under which this was possible.

Mr. H. STRAUSS said he had never before known a Minister when repeatedly challenged refuse to state the statutory authority on which he based this power.

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How could they judge the merit of the Minister's objections to the clause unless he disclosed his powers and the limitations which might govern them?

The committee divided, and the clause was negatived by 228 votes to 107.

Mr. H. LINSTEAD moved a similar clause providing for the maintenance of services provided by voluntary organisations and asked the Minister whether he was satisfied that he had power—in whatever dark recesses it might reside—to help these organisations if they were in difficulties. Mr. BEVAN promised that assistance would be forthcoming, and the clause was negatived.

DELEGATION OF COUNTY COUNCIL'S POWERS

Mr. D. L. LIPSON moved a new clause providing for the delegation by a county council to boroughs within the county of the powers which it holds under part III of the Bill as a local health authority dealing with the care of mothers and young children, the employment of midwives, health visiting, home nursing, vaccination and immunisation, ambulance services, the prevention of illness, care and aftercare, and domestic help. The borough councils had exercised these powers well in the past, and all these services were personal human services which were best administered locally, yet to most people the county administration was remote. Again, many required immediate attention, and the smaller authority met once a month and the county council only four times a year. What was really involved was the future of local government. In the past it had been a successful machine because it spread responsibility among more and more citizens. We were endangering this democratic form of government if we took away the powers of the smaller authorities. Many of the larger authorities would welcome the opportunity of delegating these powers because they felt unable to give the necessary time and attention. If the Minister persisted it would mean that the administration of these services would rest largely in the hands of officials; and local-government officers, though they might be good servants, were bad masters.

Mr. BEVAN protested that he had done nothing in this Bill with the intention of undermining the structure of local government, but had kept only one consideration in mind—the welfare of the patients and not the interests of local government or anyone else. If the new clause was accepted it would not only fundamentally change the Bill, it would wreck it. In every measure it was possible to say there were borderline cases, and it was true that there were local authorities that had reached a stage when they ought to be promoted, but that was a matter for the Boundary Commission. If after bringing in this scheme the Minister was asked to arbitrate between the respective claims of different authorities he would get into an administrative morass at the very time when the main task of launching the scheme was in hand. Mr. Bevan also pointed out that the school health service was not yet part of the National Health Service but in the Bill the local health authority was coterminous with the local education authority. Provision was made for counties and county boroughs to have subcommittees on which the local authorities in the area would be represented. He denied that we were undermining local government. Its functions were changing and must be restated from time to time in terms of the needs of the situation and of new principles of administration. Reorganisation of local government which adapted it to the needs of the situation vitalised it. What devitalised it was to maintain a structure wholly out of accord with the needs of the situation.

Mr. E. H. KEELING thought that it would create less chaos to leave these powers in the hands of the borough councils for the time being than to transfer them at once to the county councils. Mr. ANTHONY GREENWOOD urged that maternity and child welfare were not only matters of chromium, white enamel, vitamins, and cod-liver oil. The people who administered the service should know the local conditions in which the mother and child lived. Mr. J. A. SPARKS pointed out that the Minister was allowing the county councils to hand over powers to voluntary organisations and he did not see why efficient non-county boroughs should not be treated similarly. Mr. H. WILLINK thought it would have been wiser if a population figure—such as 70,000—had been taken as appropriate for an excepted district. He felt that the Minister was falling into the state of rigidity which he claimed to avoid.

Mr. KEY thought that, when people talked of taking out of the county area non-county boroughs and then large urban districts, they forgot that this would leave the county authority with a remnant area without the necessary centres of operation for the services which must be provided.

The clause was negatived by 218 votes to 115.

THE GENERAL PRACTITIONER OUTSIDE THE SERVICE

Mr. REID moved the following new clause:

The Minister may allow any general medical practitioner to make arrangements for the examination and treatment of his patients whether they be private patients or patients in respect of whom he has undertaken to provide personal medical services under this Act at any hospital within the region of the regional hospital board for the area in which he is practising in which accommodation is set aside for such examination and treatment by general medical practitioners either free of charge or on payment in part or in full of such charges as may be prescribed.

Mr. Reid pointed out that the Minister had on several occasions stated that anyone was entitled to take any part of the comprehensive medical service while rejecting other parts. Thus a patient could take the free State hospital service, even if he did not take the services of a medical practitioner in the scheme. In practice, however, there was a curious anomaly, which this new clause was designed to obviate. One could go to a State hospital in three ways—to the free hospital service, to the small ward in which one paid a part of the cost of one's reception, or to the pay block, where one paid the whole cost of one's reception. In every case one ought to have a free choice of doctor and specialist, and the specialist position was, Mr. Reid thought, reasonably well met, because the Bill did make provision for specialists having beds in pay blocks so that patients could employ specialists outside the scheme while taking the hospital service.

But, when we came to the doctor, it was rather different. The Minister had admitted that it was proper for the doctor always to be allowed to follow the patient into the hospital. Accordingly, if the doctor was in the State medical service, he was entitled to go into the hospital and see his patient, or, if it was an ailment which did not require specialist treatment, to treat his patient in the hospital. A doctor who was part-time in the State service could follow not only the patient who did not pay into the hospital but also his paying patient. But what of a doctor who was not in the State service at all? What was the difference between a paying patient who employed a doctor who was part-time in the State service and a paying patient who employed a doctor not in the State service at all? From the patient's point of view there was no difference at all, and he should have some right to the services of his doctor, whom he paid, in hospital, irrespective of whether the doctor had some other non-paying patients or not. That was the basis of this new clause. Sir HENRY MORRIS-JONES, in supporting the clause, said that though, he thought, the majority of doctors would join the scheme, some elderly semi-retired practitioners might wish to continue to be paid by private patients. There were many hospitals where no specialists were available, and the general practitioners of the area had been accustomed to have access to them. Surely the Minister did not intend to deprive one or two doctors in an area of the right of access to hospitals where they had been treating patients for years.

Mr. KEY pointed out that an amendment had been made to clause 5 extending to general practitioners the power given to specialists of attending their private patients in a hospital, but on the understanding that, like the specialist, the general practitioner was in the national service. The Government were not prepared to allow a doctor to stand entirely outside the national service yet make available to him all the facilities provided in the hospital, so that he could build up a big private practice outside the national service. Mr. Key further assured Mr. Linstead that every general practitioner serving in an area would have the opportunity

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of following his patients into the general-practitioner hospital, and that if he did so he would be regarded as being on the staff of the hospital.

The clause was negatived.

REGIONAL BOARD FOR WALES

Mr. E. ROBERTS moved a new clause setting up a regional board for Wales, but Mr. BEVAN asked that it should not be pressed for he was unwilling to write into the Bill the area of any particular board. Members, however, need not fear that the solution for Wales would depart very far from their own desires. Although Wales had a sentimental and traditional unity, God had divided it geographically in an unfortunate fashion though with considerable beauty. The result was that the medical requirements for Mid Wales were provided from one area, for North Wales from another, and for South Wales from another. But he did not want to deny to the Welsh people the advantages of being associated with universities, and a solution would have to be worked out which paid proper regard to the peculiarities of the area.

The clause was negatived.

CENTRAL COUNCIL

Mr. KEY moved amendments to clause 2 extending the range of matters on which the Central Health Services Council and the standing advisory committees could advise the Minister to embrace the services provided by local health authorities, including matters not enumerated in the Bill such as child-life protection and mental deficiency. A further amendment was passed ensuring that the council should have the opportunity of reviewing the advice given to the Minister by the advisory committees.

ENDOWMENTS AGAIN

Mr. REID moved an amendment to clause 7 providing that endowments should go not into a general pool but should be kept in the hands of the hospital management committee in whom the management of the endowment hospital is invested. No-one knew how much the pooled endowments would amount to, but Mr. Reid would be surprised if there were £30 million, apart from the teaching hospitals, and that amount, at the rates of interest now prevailing, would give considerably less than £1 million a year as expendable money under the fund. Spread out over nearly half a million beds that would not be much of a shock-absorber, and he feared that by distributing the money so widely the Minister was taking away from its value. Would it not be better to leave it where it was and enable these hospital management committees to do things outside the sealed pattern scheme of the Minister. If that way of using the funds proved a good one there would be a lead to the Ministry to go and do likewise in the other hospitals. He did not want to see one hospital for all time better off than another, but if there was to be pocket-money he wanted to see it in sufficiently large packets to enable something of use to be done with it.

Mr. BEVAN said that the endowments of teaching hospitals were often earmarked for special purposes, but money left to a general hospital was for the purpose of that hospital, and as the Government were providing for the hospital in the future they were entitled to take that money and use it for general purposes. Even Mr. Reid did not ask that an endowment should be left with a particular small local hospital, and Mr. Bevan could not see how its diversion to a general management committee rather than a national pool was a smaller violation of the intention. He could not understand this geographical definition of qualitative violations. To leave the money in the area covered by a particular management committee because if it were spread over the country it would be so thin would have the effect of leaving some management committees with no endowments at all. Yet why should the fact that an area had received benefits from well-to-do people be perpetuated at the expense of poorer areas?

Mr. STRAUSS regarded this clause as one of the two chief blemishes on the Bill. In contrast with the proviso made in the case of the teaching hospitals, these endowments would pass to the Minister free of any restrictions, yet he did not see why the Minister should be less bound. Mr. BEVAN interrupted to ask if Mr. Strauss would be content if he left a benefaction with a particular hospital but took into account that money when determining what extra sums were needed by the hospital. Mr. WILLINK pointed out that as the Bill was drafted money given to a hospital before the appointed day would be spread over all England and Wales, but if the donor waited till the appointed day he could give it to the hospital management committee in his district. As the measure stood all charitable people would believe that whenever there was a Socialist majority the House would take the money away from the purpose for which they wished it to be used and spread it according to the wishes of the Executive.

The amendment was negatived by 249 votes to 107.

Mr. KEY moved amendments extending to the hospital management committees the powers given to the regional boards under this clause.

Commander T. D. GALBRAITH moved an amendment, excluding gratuitous covenants from endowments, which was negatived by 255 votes to 110.

FUNCTIONS OF HOSPITAL MANAGEMENT COMMITTEES

Mr. WILLINK moved an amendment to clause 12 dealing with the functions of these committees, which he admitted the Minister was not likely to accept as it stood. The proposal Mr. Willink considered especially important was that all hospital officers, except specialists, should be in contract with the management committees and not the regional boards, and he urged the Minister to consider inserting in the Bill powers under which there might be parts of the service, notably the nursing service and the domestic staff, in which people could be servants of their local hospital and not of the regional boards.

Mr. BEVAN sympathised with the intentions of the amendment but believed that they could be met by leaving the structure of the Bill unchanged. He was unwilling to insert the actual functions of the management committee in the Bill because that would be fixed by regulation, which was a more flexible method. He agreed that in the recruitment of nursing and domestic staff it was desirable to maintain a close link with particular hospitals and that the regional boards should be in the background. But he thought that this would be achieved, for apart from the senior officers the rest of the staff would in fact be appointed by the management committees. Their formal contracts with the regional board would, however, provide reasonable opportunities for promotion.

The amendment was withdrawn.

THE METROPOLITAN BOROUGHS

Mr. WILLINK moved a long amendment to clause 19 providing that the London County Council should delegate its functions under part III of the Bill to the metropolitan boroughs on the lines agreed between the L.C.C. and the standing joint committee of the boroughs. The Minister had made the excuse that these proposals would put him in a difficulty with the non-county boroughs, but surely it was obvious that the allocation of functions in London was a special problem. Mr. BEVAN said his strongest reply was that the problem of London had to be considered in the light of a shifting population. We would have to redistribute a proportion of this highly congested population, and new relations would have to be established whatever authority might preside over the wider London area. He was unwilling to change one of the main provisions of the Bill to deal with a transitory situation. Further, in London he had followed the same principles which were applied to the rest of the country and he would find it difficult to make an exception, but he hoped it would be possible in London to secure a degree of decentralisation by means of a scheme, worked out in coöperation with the L.C.C. and the metropolitan boroughs, which would give local people an interest in the administration of the service. But among the boroughs themselves there were many artificial divisions, and they were not necessarily the units that ought to provide some services. It might be found that area committees on which a number of boroughs were represented would be a better solution.

Mr. D. WEITZMAN thought that London was in a special position and pointed out that the L.C.C. was the only county council that had not been responsible for welfare work, which had been carried out by the metro-

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politan boroughs. Thus the L.C.C. was an entirely new body as a health authority.

Mr. C. W. GIBSON intervened to say that not all London boroughs supported the proposals.

The amendment was turned down by 224 votes to 99.

UNORTHODOX HEALERS

Mr. G. HOUSE moved an amendment to clause 33 providing that nature-cure practitioners who reached a required standard of training should be recognised under the Bill and that patients should have the unfettered right to attend the practitioner of their choice. The first proposal, he said, was based not solely on the merits of nature-cure practitioners but conversely on the fact that medical practice, in so far as it is based on the application of medicine, drugs, and vaccines, was undesirable. The Bill enforced a weekly contribution of 4*s*. 11*d*., a comparatively heavy sum for a working-class man, and the poor person could only have real freedom of choice if the services of a nature-cure practitioner could be paid for from the National Health Service fund. Nature-cure practitioners, Mr. House asserted, would be willing to offer their services to the community on the same capitation basis as the medical profession. He admitted there was a difficulty about qualification. Some schools for nature-cure practitioners laid down for their members a minimum of four years' training, and all over the country there was an endeavour to get their standard of qualification on an acceptable basis. But he agreed that we could not dip into the national funds for practitioners whose qualifications could not be proved. He thought the Minister should give these people some help. To say that they could only be recognised provided they took a medical degree was a cowardly evasion. Was it right that people who were opposed to chemicals and drugs should be asked to take a medical degree? Mr. R. EWART, who seconded the amendment, pointed out that under the new Bill people who objected to submitting themselves to orthodox treatment would be denied the right of benefit given them by the National Health Insurance Act of 1936.

Mr. BEVAN said that the heterodoxy of yesterday often became the orthodoxy of today, and that the medical profession now practised many forms of therapy which it formerly rejected. There was nothing wrong with that and it was not being interfered with. But he did not intend to commit the indiscretion of judging the relative merits of one form of therapy as against another. The House was discussing an amendment which would place on the executive council of each area the obligation of providing whatever kind of medical attention any citizen might want. That was impossible, yet that would be the result if the language of the amendment were adopted. If one were to begin to select, from the forms of therapy lying outside the Medical Acts, forms which we would be prepared to give, where should the frontier be fixed? He had met representatives of these unorthodox bodies. Many were people of dedicated zeal who had done good to many; but the evil they had done was not on record, and that was the whole difficulty. Unfortunately the evil done by doctors was not on record either. If the House placed upon the Minister the responsibility of providing a service they must accept the obligation of defining that service, and so far Parliament had decided that the service was to be the medical service within the Medical Acts. Once a doctor was qualified no-one interfered with the kind of treatment he gave, and no-one would interfere with what a nature-cure practitioner did after he had acquired a medical qualification. But Mr. Bevan thought it appalling that the State should be called upon to provide a form of treatment which the proposer of the amendment himself could not define because almost all the evidence for it was subjective and based on testimony. If it were capable of systemisation, codification, or verification it would become an accepted form of medical therapy. He was not suggesting that medicine was 100% scientific, but it was scientifically ascertainable. Most of the weekly contribution of 4*s*. 11*d*. was for pensions, invalid allowances, and so forth, and less than 8*d*. was for the health services, which were mainly free. If people wished to avail themselves of a form of treatment not provided by the National Health Service they would have to pay for it. It was true that under the National Health Insurance Acts there was some provision rarely exercised for the subvention of people who wished to have some other form of treatment, but it was difficult to administer and if it were extended would become impossible.

Sir HENRY MORRIS-JONES pointed out that unorthodox treatment which delayed orthodox treatment had resulted in great loss of life. Sir ERNEST GRAHAM-LITTLE declared that schools of naturopathy in this country were few and ill equipped and their examinations puerile. Osteopathic schools were entirely confined to America. Halfway through the House of Lords' inquiry into osteopathy its champions were overwhelmed by the evidence and threw in their hand. He thought there should be a basic examination to ensure that practitioners of irregular practice should know something of the action of drugs even if they did not deal with them. At present they were rightly cut off from consultation with qualified practitioners and thus lost the immense impetus of meeting their fellow workers. For these reasons Sir Ernest thought it was premature to recognise any branch of irregular practice. The amendment was negatived.

CERTIFICATION

Mr. R. H. TURTON moved an amendment to provide uniformity of style, legibility, and cost of medical certificates. Why should the Minister not have power to make regulations for all medical certificates and not only those required under the Bill? Why could not all medical certificates be free? Mr. BEVAN said that at present the issue of certificates, when charged, was limited to certificates connected with insurance work. The language of the Bill extended that a good deal, and further certificates would be issued for the purpose of any enactment under which certificates were required. But to suggest that anyone should receive a certificate from a doctor whenever he wanted it and whatever he wanted it for would be going too far. The amendment was withdrawn.

DISTRIBUTION OF PRACTITIONERS

Mr. REID wanted clause 34 amended so as to allow any doctor to go on any list in any part of the country provided he is not personally objectionable. In the second reading debate the House had been told that the clause in its present form was essential to achieve a proper distribution of doctors, but upstairs in committee it appeared that all these objectionable clauses were based on the ideological belief that there is something intrinsically evil about the purchase and sale of goodwill. The Minister had not shown that control of the movement of doctors was necessary for practical reasons. And how would an "adequate" number of doctors in an area be interpreted? Any practitioner who did not choose to go to one of the very few grossly under-doctored areas might be told "No, those are relatively adequate, and you cannot go there without permission." Any such strict limitation was wholly uncalled for. When over 90% of the population went on doctors' lists, areas at present not very attractive would be among the most attractive financially. In a certain number of difficult areas—e.g., with scattered populations—an additional salary might be offered.

"If there is no part of the country to which a doctor in the public service is to be allowed to go without getting the permission of some committee, then we are miles away from any question of maldistribution, because maldistribution would lead to setting aside over-doctored areas which cannot be entered without permission, and under-doctored areas where everyone is welcome."

In filling vacancies it now appeared that three partners could no longer say "we want John Smith as the fourth": instead they must take a man selected by the committee of their medical colleagues in the district. "Is it necessary that this very elaborate system of control should be put upon the medical profession?" Nobody had yet produced any fact that would justify it. The utmost possible freedom should be given to doctors to come together in partnerships.

Mr. BEVAN said there were two first principles—that the sale of practices is objectionable and that equitable distribution is required in the general-practitioner service. Whichever of these principles was regarded as primary, the effect was the same: the present method

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of obtaining a successor was abolished and new machinery was required for distribution of practitioners. The Government suggested that the selection of doctors to fill a vacancy should be by the local executive council, because —especially in group practices—a new doctor ought to be a person agreeable to his future colleagues. At the centre the Medical Practices Committee would have a complete picture of the situation throughout the country :

"Any doctor wishing to enter into contract will be able to see where any vacancy exists at any moment. Therefore, he would be able to decide to what particular place he wished to go and to which executive council he wished to make application. . . . The local executive would consider the application, and the local medical committee would make representations."

The partner, though not the final determinator, would obviously influence the appointment. To have the individual doctor appointed by the Medical Practices Committee would indeed be bureaucratic centralisation, but validation by the committee made it possible to appeal against any irregularity—e.g., undue influence. Mr. Reid's amendment would wreck the whole scheme :

"What he suggests is that the doctors themselves should have the right, in any part of the country, to enter the public service at their own will, claiming something which no other profession has. When a person enters the public service, surely a nation is entitled to say where it wishes this service to be given. It is only some doctors who would claim that, at any time, they should be allowed, without any principle of distribution being exercised at all, without anything being asked of them, to attract public money——

"Sir H. MORRIS-JONES : The right hon. gentleman is taking away from them the right which they have now, and they have never asked for that right to be taken away.

"Mr. BEVAN : The hon. Member is quite right, but I wish to point out that doctors are not yet in sole control of the country. It is we who have decided that we are going to have a public health service, and, therefore, what we must do is to construct the principles which make that service practicable. Certainly the doctors have not asked as a body for a National Health Service, but the doctors have supported the National Health Service, and the proper organisation of the National Health Service implies that we must make available to the whole population an equal share of the doctors, and the only way in which that can be accomplished is by having a proper distribution of general practitioners. If doctors are allowed to go anywhere, the task imposed upon the scheme would be formidable and almost impossible to exercise, because we would never know where the doctors were going until they had gone."

If they wished to receive remuneration from the public service the State was entitled to attach conditions to the remuneration, and one condition was that the doctor should not serve where his services are not needed.

Mr. STRAUSS suggested another first principle—that doctors entering the public service should be happy in their professional work and should enjoy as much sense of freedom, and not as little, as was compatible with the necessary arrangements. The best judge of whether a district was over-doctored was the public in that district. Doctors in a barred area would have no stimulus to maintain their efficiency.

After further debate the House divided on Mr. Reid's amendment, which was defeated by 277 votes to 128.

PROHIBITION OF SALE OF PRACTICES

Mr. REID moved the omission of clause 35 dealing with sale of the goodwill of practices. We ought not, he declared, to mix up medicine and Socialism, but if he was not in order in saying that there was no need to abolish the sale of goodwill at least it ought to be done in a much simpler way. In future no doctor could sell his house to another doctor, enter into a partnership, or engage an assistant, without going to the Medical Practices Committee with a full and comprehensive statement. That would be a monstrous imposition on a busy man. Further the Minister could not guarantee that the doctor would receive an answer from the committee in a fortnight or even three weeks.

Mr. BEVAN pointed out that the State had set aside £66 million for compensation for the loss of goodwill ; surely it was therefore entitled to take precautions to see that a doctor did not benefit twice. It had been agreed that local doctors should influence appointments to their district, and the further danger arose that a newcomer might offer financial inducement to local doctors to influence his appointment. He agreed that the original clause had been drawn very tightly—microscopically so—but it had been substantially amended in committee. The doctor now only had to obtain from the Medical Practices Committee, mainly a professional body of his own colleagues, a certificate that the transaction was a reasonable one. That was a defence in court against any action whatever. The point had also been made that a doctor might get himself into a difficulty innocently, and in a later amendment Mr. Bevan was introducing the word "knowingly" to make it clear that there must be awareness of the offence before it had been committed. He believed that the introduction of the protective registration by the Medical Practices Committee had largely reassured the medical profession.

The amendment was negatived by 305 votes to 110.

Mr. KEY moved amendments, which were accepted, ensuring that all trials would involve trial by jury and not by summary jurisdiction ; that where a partnership or assistant agreement had been entered into before the coming into operation of the clause there could be no offence in accepting instalments previously agreed to.

DISQUALIFICATION

Mr. REID moved that disqualification of a doctor or other practitioner should be only "by reason of his failure properly to provide the services which he has undertaken." Under the Bill it was possible for a doctor to be dismissed by the Minister merely because the Minister thought he was a bad influence. The question was : Is he to be turned out because something definite has been proved against him with regard to his past actions, or is he to be turned out because his superior has no confidence in him ? This was important because, as the service approached 100%, exclusion would mean professional death.

Mr. BEVAN said there were all kinds of reasons that might make a doctor a very bad person to employ, and he preferred the language of the original clause which permits disqualification if his continuance "would be prejudicial to the efficiency of the services in question." Before a doctor could be removed, however, something must be proved against him—something which made him, in respect of his being a doctor, a bad public servant. Mr. Bevan later explained that he could not claim to pass judgment on a doctor as a doctor ; this was a matter for the General Medical Council. But if a doctor fell short of what was required by the National Health Service he was liable to be removed.

The amendment was withdrawn.

RIGHT OF APPEAL

Mr. BEVAN moved the reinsertion of the doctor's right of appeal to the Minister from any direction of the tribunal. In committee, he explained, this right had been deleted, but the alternative right of appeal to the High Court had not been carried, with the result that the doctors were deprived of one of their remedies.

The Minister and the doctor, or rather the executive council and the doctor, were, in some respects, in employer and employee relationship, and in accordance with constitutional precedents the employer could dismiss the employee without any redress. But in establishing this great service it seemed to him that it would be difficult, if not impossible, for doctors who were removed from that service to obtain a livelihood outside, and that special protection should be given to them against any possibility of injustice.

Describing the protection given under the scheme, he said, in the first place, there would be a medical subcommittee of the local executive council, consisting as to 50% of professional representatives. A complaint made against a general practitioner would be first examined by that subcommittee of the executive council. That was not in the Bill, but it would be determined by regulation. Then the executive council, again as to 50% of their membership professional people, would consider the complaint. Suppose that body decided the allegations were well founded, and that the doctor should be removed from the list. The doctor then had the right of appeal to the tribunal. At the moment the doctor had only the right of appeal against the local committee straight to

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the Minister. In no other profession was there this tribunal. He had interposed the tribunal between himself and the local executive in case the local executive council were prejudiced. The chairman of the tribunal would be a lay local person appointed by the Lord Chancellor. The doctor would be able to put his witnesses before that council to be cross-examined, to give evidence in person, and employ all the panoply of a legal tribunal. If the tribunal decided that the local executive were correct in their decisions the doctor had a further appeal, to the Minister, who would then institute an inquiry. The doctor would still have certain rights of appeal to the court. He could appeal on the grounds that the procedure laid down for his trial had not properly been carried out; that one of the tribunals had exceeded their powers; and that the principles of national justice had been violated. There was no inhibition against appearing before the court, because he was not a State servant.

How could a judge of the High Court better decide than the executive council whether a doctor had been an efficient servant of the service? Parliament placed upon the Minister the responsibility for providing a health service, and provided him with the instruments through which that service was to be given, but if one of the instruments was to be selected by the High Court judge, where did Parliament come in? After further discussion the amendment was carried by 296 votes to 129.

MINISTERIAL AMENDMENTS

Mr. KEY moved amendments to clause 59 and to the third schedule carrying out the Minister's promise to allow hospital management committees to receive gifts and hold land, and an amendment to clause 72 providing that the Minister should make special orders determining the areas of the regional boards and separate orders for the constitution of the regional boards.

POWER OF COÖPTION

Mr. WILLINK moved an amendment to the third schedule giving a hospital management committee power to coöpt not more than three people to be members of its committee. Mr. BEVAN resisted the amendment, as people with special interests could be appropriately coöpted to serve on subcommittees.

FROM THE PRESS GALLERY

Bread-rationing

In the House of Commons on July 18 Mr. WINSTON CHURCHILL moved the annulment of the Bread Rationing Order dated July 12. After careful consideration, he said, the Opposition could not feel convinced that bread-rationing was necessary on July 21. It was said that the pipeline contained only eight weeks' supply, and that the position would be dangerous by August 31; but by then we should reach the new home harvest. For September the Minister was counting on 250,000 tons from our own harvest, and so we need import only 150,000 tons to maintain the pipeline above the danger-point. According to those who knew the trade there would be no difficulty in importing 150,000 tons, and indeed far more, in September. After September we had the whole of our home harvest within our reach, and although the problem of our bread-supply might remain, its urgency would have vanished. Mr. Churchill asked for an explicit assurance that the Government adhered to their statements that the scale of bread-ration in this order would not be further reduced. He agreed that if the Government felt that there might be a breakdown in supply in certain localities they were bound to prepare rationing machinery; but it would be best to prepare a scheme on better lines during the next few weeks, after full consultation with the trade, and not enforce it till the necessity was proved. While he thought that the bakers had been ill treated in this matter, he strongly advised them to make work as well as possible whatever scheme was thrust upon them by the Government on the authority of Parliament.

Mr. JOHN STRACHEY said that the Government regarded September as the month in which we could legitimately hope for the beginning of a recovery in our stock position; but it would be rash to expect any but a minimum importation of Canadian wheat and a much lower importation than usual; for, in a largely successful effort to get the world through this desperate situation, the Canadians had run their stock position down to an unparalleled degree. The prospects were appreciably brighter than when the House last debated the matter; but, after all, the new crops had not yet been reaped. He assured Mr. Churchill that it was quite impossible to import 150,000 tons of wheat, or any comparable amount, in September. He agreed, however, that if the prospects improved, bread-rationing might be discontinued much earlier than seemed possible a few weeks ago. To postpone its introduction beyond July 21, however, would mean that it would not provide the necessary insurance against the various uncertain factors of the period in which our stocks would be dangerously low.

In the subsequent debate Mr. E. F. M. DURBIN said that the great difficulty inherent in any system of bread-rationing was the immense difference in the food requirements of individuals. If the scheme was to be criticised at all it was on the ground that the principles of differentiation and the categories were not sufficiently complicated. Unfortunately, the obvious sources of difference of size, rate of growth, and output of physical energy were not the only, or the most important, source of quantitative difference between different people in their calorie requirements. Work done at Cambridge some years before the war had shown that there were congenital differences between individuals, not associated with their size or output of energy, that could cause as much as 100% difference in the calories needed to maintain their body-weight. That was a difficulty which brought grave danger into any system of rationing of the calorie buffer which was based upon average. Quite apart from size or ways of life, one family might need twice as large a daily intake of calories as other families. There was no conceivable system of rationing based upon averages that could take account of such wide differences. True, there would be only perhaps one family in 20, or even one in 100, that aggregated would require much more food than other families. But however small the number of families might be whose health and weight would be affected by rationing, their existence would go far to discredit the scheme. The Minister should set up some method of appeal, or some form of medical diagnosis, which would save the nation from the shame of having starving families in its midst.

Dr. EDITH SUMMERSKILL, parliamentary secretary to the Ministry of Food, said that, if necessary, adjustments could be made in the scheme.

The motion to annul the order was negatived by 305 votes to 182.

QUESTION TIME

Alien Medical Practitioners

Sir HENRY MORRIS-JONES asked the Minister of Health on what date the temporary registration scheme for alien medical practitioners expired; and what was the policy of His Majesty's Government in regard to these doctors, particularly those of allied nations.—Mr. A. BEVAN replied: Under the Emergency Laws (Transitional Provisions) Act, 1946, the scheme expires on Dec. 31, 1947, unless the relevant Defence Regulation is revoked earlier by Order in Council. Future arrangements are under consideration and it is not yet possible to make a statement on the subject.

Diphtheria Immunisation

Mr. PETER FREEMAN asked the Minister of Health how many children had contracted diphtheria after immunisation since the practice was first introduced; how many fatal cases had occurred after being immunised during the same period; what information he had of temporary or permanent injury to the health of such children following immunisation; and to what extent such children had been proved to be more likely to be subject to other diseases or illness in later life.—Mr. BEVAN replied: Returns from local authorities in England and Wales show that between January, 1940, and June, 1945, diphtheria notifications and deaths respectively numbered 19,040 and 142 among immunised children, as compared with 141,600 and 3635 among children not immunised. Of some 6 million children immunised in England and Wales 14 cases have come to notice of later illnesses in the possible causes of which, I am advised, the diphtheria prophylaxis cannot be positively excluded as having had no part. I know of no evidence to support the suggestion in the last part of the question.

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In England Now

A Running Commentary by Peripatetic Correspondents

IT'S difficult to describe in a few words what things are really like here in the Ruhr. There isn't a famine—not properly—but there is not enough food, and what there is is badly distributed. That means the rich and influential and the farmers are pretty well off while the poor are in a bad way. When the official ration was reduced to 1000 calories the black market took most of the shock and disgorged enough to prevent actual famine in the population. But closed institutions like asylums and orphanages were badly hit. That was the biggest miscalculation, and it has been partly rectified now by the addition of 700–800 calories. Weight-curves for nearly every age-group are still going down, but the new crops are coming in and there is hope that next winter won't be so bad.

The destruction here is just awful. I'm getting used to it now, but it's worse than any of the accounts I had read, so it took my breath away at first. It's difficult to imagine where and how—or for that matter why—the people go on living. There is apathy everywhere; not much coöperation and not much resistance. We all feel sorry for the Germans, which is rather strange when you think how we felt about Coventry and Stalingrad. The black market is terrific. One cigarette is equivalent to about 2*s.* 6*d.* You cannot help subscribing to local custom and paying for personal services in cigarettes, which will buy food, instead of in marks which will buy very little. Anything worth while—cameras, glasses, &c.—cannot be got for money. Cigarettes are the real currency. Farmers will disgorge food for cigarettes, and it is they who decide it all. It's a most crazy system. I wish I understood the psychology of it all.

* * *

The arm of coincidence, you will recall, like that of the law and the chimpanzee, is traditionally long. Recently a lady came to outpatients whose husband had contracted T.B. during his 4½ years' imprisonment in the Far East and was anxious to make sure that she had not become infected. The next day I had to see a patient out of town and decided to lunch at the terminus hotel. A table was reserved by telephone, but on my arrival the maître d'hôtel, undaunted by having allowed all the single tables to be occupied, waved me to a vacant seat at a table for two with the usual gracious gesture. Yes, Gentle Reader, you have guessed it; the other occupant was my patient of the day before. In conversation it appeared that it was equally not her habit to lunch there, but she had aimed to forestall her husband's chiding about her sandwich habits. No doubt when I have seen the X ray, the sputum report, and the B.S.R. I shall see the lady for the last time. In any case I have promised my wife that this Brief Encounter will not proceed in the manner of Mr. Coward's excellent film.

On my journey I recounted my adventure to a fellow passenger, who told me that he was travelling one day by Tube and like many others standing near the doors when the train stopped at a station and the first passenger to be impelled into his arms was his father, who had unexpectedly come up from the country for the day. No doubt each time I repeat my story my listener will cap it from his own experience. When I told it to a colleague he remarked that he knew a G.U. surgeon whose car registration number begins YP.

* * *

I learned of some quaint old American customs through pressure of accommodation in Washington leading me to stay at what we should call a superior boarding-house. In spite of the American passion for plumbing, the cold tap invariably delivered hot water and vice versa—a pleasant variation on conditions on the Continent where both taps deliver cold or nothing. A notice of "house rules" on the door forbade the entertainment by guests of persons of the opposite sex in their rooms unless they were ill and a doctor was in attendance; this had naturally provoked some ribald comments on our profession scribbled by previous tenants. I also noticed that the key-hole in the common bath-room had been stuffed up with toilet paper against emergencies. But perhaps it was just as well I had not succeeded in getting into a high-class hotel, since a British colleague was startled one evening to find that a box of chocolates, put on the window-sill to keep them from melting, was full of blood. It seems that a gentleman in the room above had cut a lady's throat and thrown her down four stories, following later himself, both being appropriately clad for the present hot weather.

* * *

Macaulay's New Zealander, had he stood on Westminster Bridge at 9 A.M. on July 16 to gaze on the ruins of St. Thomas's Hospital, would have been reminded of his native hot springs, for a bitterly cold north breeze, meeting the Thames water running off the sun-drenched land, caused volumes of steam to pour along its surface like clouds from a bathroom—a crazy effect, like that of a man advertising "Ices all hot."

* * *

After attending one or two interviews, as another correspondent observed a few weeks back, one comes to belong to a definite, but one hopes diminishing, band of brothers. Next time I go up for one of these occasions I know exactly whom I shall see. At the first session we were all there. We said nothing to one another, but sat as far away as possible and read the books which the residents had thoughtfully left about—I had been provided, rather appropriately, with a study of the post-mortem findings in suicide; the others looked as if they'd found something similar. Everyone looked sideways at his fellow and tried to decide by his clothes and facies if he had a Service record and membership. The civilians looked apprehensively at the man in uniform with a M.C. ribbon up. That job was awarded in the menagerie, so next week we all met again. This time we got a little closer together and decided that psychiatrists were a bad thing, and that State medicine would get us all up earlier in the mornings. Our third meeting was quite chummy; our fourth almost hilarious; I think our fifth will adjourn to see "Sweetest and Lowest." A pity if one of us is appointed before then.

Meanwhile we are founding a learned society, with a *Journal of Experimental Candidature*. We shall invite papers from all fellow-sufferers. In dividing up research, the M.C. bagged the department of Snap Physiognomy; he will work on sizing up fellow runners and the personnel of medical boards—those miscellaneous faces who ask you questions and tell you to wait outside. He is practising in Madame Tussaud's. I mean to study the psychology of rudeness, as exemplified by some governing bodies. I am collecting statistics, indexed something like this:

Time of appointment, 6.30 P.M.
No. of persons short-listed, 15.
Time when interviewing actually began, 8.47 P.M.
Interval between interview and receipt of notice of non-appointment, 2 months.
Behaviour of board, bland.
No. of persons who travelled from the Provinces for this interview, 5.

My tame psychologist shrugs and says, "Well, you didn't get the job—aren't you projecting your frustration, &c.?" I hope not: one or two of my cards are less discouraging. Take the hospital which short-listed 5, saw them within fifteen minutes of zero hour, notified the eliminated persons at once, and wrote three days later to inform us all of the name of the successful candidate and to thank us for having attended.

If the learned society doesn't show itself sufficiently learned, we may turn it into a Candidates' Defence Union. If you see a sandwichman outside the Hospital for Old Soldiers with a notice saying UNFAIR, that will be me.

* * *

If the State Medical Service does get us up earlier, I hope *The Lancet* will become a daily. Friday is the only day I am not late for breakfast, and I have *The Lancet* to thank for it. Not that I am so wild to see if the formula of folic acid is out yet that I rush down and wait at the letterbox. The effect is a purely mechanical one. We have no internal doormat, and the crash as *The Lancet* arrives would wake anyone. Hence the probable need for a *Lancet* every weekday except Saturday when, of course, we in the State Service will have our day off. It need not contain much original matter—a sizable piece of wood would serve—but if it appears on Saturdays I shall ask the editors to upholster the ends.

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Reconstruction

REGIONAL BOARDS

FROM A CORRESPONDENT

"THE Regional Board," said Mr. Bevan in the standing committee, according to the official report (May 23, 1946), "is a bit of an obstruction." No doubt he said "abstraction," and the word more familiar to the shorthand writers crept into the report.

Mr. Bevan is quite right. The regional boards will indeed be something of an abstraction. The real work will fall to the hospital management committees, while the function of the regional board will be to canalise the authority flowing from the Minister—to inspire, to coördinate, and to supervise. We know that the boards are to comprise unpaid personnel chosen for their individual qualifications and their knowledge of hospital affairs. It is obvious that many of their functions will involve delegation—to subcommittees and to individuals, whether paid officers or not—whose advice and guidance will carry much weight with the hospitals. Critical discussions on the make-up of the regional machinery are now taking place behind the scenes; and it is much to be hoped that, when the draft of the regulations emerges, it will be found that those concerned have resisted the temptation to follow the already old-fashioned hierarchical pattern. An attempt, therefore, to distinguish possible alternative lines of development may not be untimely.

Two conceptions are competing for supremacy, very different in their probable ultimate effect on the success or failure of the scheme. It is one of the difficulties that it is far from easy to find terms by which the opposing conceptions can be clearly described and discussed.

THE SERVICE CONCEPTION

On the one hand, we have the comparatively simple "service" conception of the regional organisation, with departmental officers and staff, each possessing their defined sphere of responsibility, directing and inspecting the various departments of hospital activity. Thus, to take one or two examples at random, we should have a regional nursing officer responsible for the standard of nursing throughout the hospitals, without whose assent a matron would be foolish to venture upon any innovations in nursing technique or organisation. We should have a regional financial officer, without whose blessing no hospital committee would care to incur expense for which there was no precedent. We should have, too, a regional architect, to whom projects would stand referred for translation into plans and estimates.

The advantages and economies of such a scheme are not to be underestimated. In hospital affairs today the field for the expert is very large. The objections to this form of organisation are, however, serious. It is not really possible to elevate the status of the regional officer without derogating from the status and responsibility of the corresponding personnel in the hospitals; and, in the long run, the field for initiative and ability is narrowed down. An immediate technical improvement is bound to be followed, as the years pass, by loss of interest and a passivity on the part of the best men and women in the hospitals. If these people begin to feel that wisdom lies not in making their own decisions but in ensuring that their activities will commend themselves to the regional officers, heaven help us.

THE ALTERNATIVE

The alternative conception of the method by which regional influence may be exercised is much more difficult to describe and to formulate, and what follows is but a halting attempt to indicate some of its features.

Must the region possess professional specialist staff at all? If so, then let us remember the relationship between the sector organisation of the E.M.S. and the hospitals in the sector. A cardinal feature was the plan whereby authority was vested in professional personnel—medical, nursing, and administrative—who themselves already occupied posts of responsibility at the principal hospitals concerned. Despite shortcomings here and there, the merits of this plan have been obvious. Policies have been formulated with instinctive knowledge of the difficulties that would arise in their execution. Hospitals have taken their problems to the officer concerned, with the certainty that he (or she) would meet them, not with the arbitrary authority of the official, but with the sympathy born of experience. Is it too much to hope that in the region a similar plan will be followed, and that it will be made a golden rule that no-one shall be appointed to a post carrying regional authority who does not already and concurrently hold a "key" position in his or her respective sphere?

Such a plan is not, however, in itself an all-sufficient guarantee against arbitrary decisions. The procedure must provide for the give and take of discussion; and here an example may be drawn from the experience of the King's Fund. For many years past the fund has exercised an acknowledged influence over the voluntary hospitals in the metropolitan area which has in part foreshadowed and suggested the functions that may be expected from the regional boards. The visitors appointed by the fund have been drawn from among the ranks of the consultant staffs of the hospitals; their reports have been made to committees of the fund, with elaborate precautions to ensure that where an adverse comment is considered to be justified the hospital concerned is afforded an opportunity to state its case to the fund. Proposals for extension have been referred to the fund, and much valuable advice has been given, but always in discussion across the table between responsible subcommittees of the fund and the accredited representatives of the hospital. Advisory services, as in the case of hospital diet, have been instituted; but there has been no attempt on the part of the fund to use the power of the purse to impose a cut-and-dried pattern upon the hospitals within its sphere. Is it too much to hope that in these all-important matters of procedure, too, the regions may profit by the experience already available?

It is perhaps impossible to find a word or a phrase that adequately describes this general approach, and effectively contrasts it with the "service" model. The clue seems to lie in two things: first, in ensuring that authority in each sphere is retained in the hands of those who are professionally the equals of those over whom it will be exercised; and, second, by adherence to the principle that, whenever questions of policy arise on which opinions may differ, decisions shall be reached, not by an official applying to the papers on his desk criteria of some central policy, but always in discussion across the table with those responsible for the execution of the project.

Much will depend on the wisdom of the chairmen of the regional boards and their chief executive officers. In the meantime let us hope that the Minister and his advisers are awake to the danger, and that nothing will be done which would tie the hands of the regional boards and set the mould on "service" lines in a way that would preclude the development of a more wholesome tradition. At times the Minister has seemed to speak with real appreciation of the danger. He has assured us that one of the attractions of his plan is the fact that it will not involve the creation of a single additional civil servant; but at other times disquieting phrases have crept in, sufficient to indicate that the struggle between the two conceptions has not yet been resolved.

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Special Articles

MEMORANDUM ON B.C.G.

A BRITISH REVIEW

In 1943 the Tuberculosis Association, in conjunction with the Joint Tuberculosis Council and the National Association for the Prevention of Tuberculosis, decided to submit to the Minister of Health a joint request that B.C.G. (Bacille Calmette-Guérin) vaccine should be made available for trial in this country. The following is a summary of the memorandum, prepared on behalf of these bodies by Prof. W. H. Tytler, which has now been presented to the Minister of Health and the Secretary of State for Scotland.

ABSENCE OF VIRULENCE

The failure hitherto to provide completely satisfactory artificial immunisation may be due to inherent characteristics of the tubercle bacillus. Of two possible systems —(1) the application of dead bacilli and (2) actual infection by living bacilli of strains which have no power to cause progressive disease—the latter has given the more promising results. Immunisation by living bacilli, both with attenuated strains of true tubercle bacilli and with related bacilli of low pathogenicity, has been studied extensively in animals, and some success has been attained. So far, however, only the B.C.G. strain has produced significant immunity and at the same time proved safe enough for use on human subjects. Its only prospective rival is the vole bacillus of A. Q. Wells, which has given promising results in animals; but neither its efficacy nor its safety has yet been firmly established.

In 1908 Calmette and Guérin announced that a particular strain of bovine tubercle bacillus, cultured on potato with added ox-bile, had rapidly lost its virulence. Twelve years later they reported that this B.C.G. culture was harmless to man in intravenous doses of at least 44,000 bacilli; this established its safety for immunisation of cattle, even should the bacilli be excreted in the milk, and at the same time pointed the way towards its use in human vaccination.

According to Calmette, the B.C.G. strain in 1921, after 230 successive passages on glycerinated ox-bile potato medium, was incapable of causing progressive tuberculosis in any animal species, though very large doses might cause death, as may dead tubercle bacilli; it was a *virus fixe*, with complete and permanent loss of virulence. Against this, some workers claimed to have demonstrated a certain degree of virulence, under special conditions of culture or by animal passage. Others who were unable to find any evidence of the return of virulence ascribed the positive findings to such factors as contamination of cultures by virulent tubercle bacilli, to mistaken diagnosis of tuberculosis in animals, and to spontaneous infection in crowded animal-houses. None of the positive results were obtained under the conditions laid down by Calmette, and all were reported during the first 8–10 years after B.C.G. came into general use.

That the B.C.G. culture may vary in its power to produce lesions and may largely lose this power and that of producing immunity is suggested both by experimental work on animals and by analysis of human vaccination. But the best evidence of its safety is the absence today, after two or three million vaccinations on man, of a refutal to Calmette's assertion that no single case of tuberculosis could be traced with certainty to B.C.G. infection. What opposition still exists is largely rooted in the Lübeck disaster of 1930, when, of 249 children who were given by mouth what purported to be B.C.G. vaccine, 73 died within a few months. It was decided by the German courts, admitted by the director of the laboratory concerned, and accepted by visiting scientists that the deaths were due to contamination or replacement by virulent bacilli. The Kiel culture, which was maintained in the same laboratory, gives a characteristic green colour, never seen in any known strain of B.C.G., but identified in cultures from the fatal cases and in the remains of the vaccine suspension.

EFFICACY OF B.C.G. VACCINATION

Animal experiments show beyond doubt that in most species immunity in some degree follows vaccination with B.C.G. The evidence of immunity in man following vaccination rests on (1) the development of a positive tuberculin reaction, with presumption of parallel immunity, and (2) morbidity and mortality statistics in the vaccinated and unvaccinated.

Reactor-rates.—The results of vaccination by oral administration among children of healthy parents are shown in table I.

The steady rise in each group and the higher rates under conditions of exposure strongly suggest that natural infection plays an important part; and the large residue of negative reactors raises doubt as to the number of these in which an actual infection by B.C.G. occurred. Calmette claimed, on experimental evidence, that

TABLE I—MOUTH VACCINATIONS IN CHILDREN

No. vaccinated	Reactor percentages (months) at—				
	3 m.	*6 m.*	*12 m.*	*18 m.*	*24 m.*
392, in healthy environment	4·5	5·1	14·2	21·6	23·3
152, in tuberculous environment	14·7	20·0	35·1	40·9	50·0

immunity could exist without allergy, which appears from more recent work to be true in a qualified sense. Wallgren found that the allergy after B.C.G. vaccination was usually of too low a grade to be demonstrated clearly by the Pirquet method, and he obtained much higher positive rates by the Mantoux test. It is, therefore, probable that many of the Pirquet-negative children in this series were actually infected. Even if it is accepted that the higher rate among exposed children results from natural infection contracted despite vaccination, this does not necessarily indicate absence of immunity. Such a natural infection, resisted or limited by partial immunity due to B.C.G., was anticipated by Calmette as a desirable result, which would produce a firm and lasting immunity without danger of progressive disease. This sequence of vaccine immunisation, followed by a resisted natural infection, represents perhaps the most effective means by which a lasting immunity may be built up by artificial methods. But it is difficult to assess the results of oral vaccination on the basis of reactor-rates or of mortality statistics.

From 1924 subcutaneous vaccination was widely adopted, and in 1930 it was reported from Norway that, of 136 nurses so vaccinated, 109 gave positive reactions at 6–8 weeks and the remainder at 3–24 months. In 1145 young adults the rates varied in different groups from 31% to 81%.

By intracutaneous injection, adopted by Wallgren in 1927, 95% reacted at 6–7 weeks, and almost 100% at 16 weeks, some after revaccination.

In 1939 Rosenthal, of Chicago, described the method of multiple needle puncture of the skin, made through B.C.G. suspension spread on the surface. Its efficiency and its outstanding advantage—the lack of abscess formation—have since been amply confirmed. A series of linear scarifications with a vaccine stylet is preferred by some to multiple punctures; with this method 700 primary inoculations gave nearly 100% reactors at 2 months.

In 1943 the Norwegian vaccinations are reported to have numbered 13,515, with 95% reactors; and in 1944, 17,579, with lower reactor-rates. The drop was ascribed to a probable decrease in virulence of the B.C.G. strain. Rydén has reported this year that nearly 100%

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TABLE II—DEATHS AMONG INFANTS, AGED FROM 1 MONTH TO 4 YEARS, IN CONTACT WITH TUBERCULOSIS

Group		Cases	Deaths (%)	
			Tuberculosis	All causes
French children born of tuberculous mothers and either not separated or else living in a tuberculous environment	Vaccinated	2368	2·8	11·8
	Non-vaccinated	4854	15·6	20·5
Lancashire children in house contact with tuberculosis, and observed 4 years	Contact sputum +	329	2·73	10·64
	Contact sputum −	114	0·87	11·52
Total		443	2·26	10·61

of 15,000 persons vaccinated in Sweden became reactors. Reactor-rates in infants have usually been lower, but in 3299 newborn infants vaccinated intracutaneously over 4 years, the rate rose from 84·5% in 1942 to 95·7% in 1944, with a drop to 92·4% in 1945.

Morbidity and Mortality Statistics.—Calmette's figures, published in 1928, showing the effect of B.C.G. vaccination in infancy on deaths through tuberculosis, have been set against deaths in a comparable non-vaccinated Lancashire group (table II).

The Lancashire figures for non-vaccinated house-contacts are lower than the French figures for vaccinated; but Calmette always emphasised the greater relative advantage of B.C.G. in conditions of severe exposure; and it is probable that these conditions existed to a much greater extent in his material than in the Lancashire series. Later, Calmette gave enlarged figures of deaths from tuberculosis for the same group as vaccinated 2·4% and non-vaccinated 15·9%. Similar results were recorded in the Pasteur Institute report of 1932 for countries other than France. The death-rate from all causes in the first year of life among the vaccinated, who numbered 443,656, was 7·9%, whereas in the non-vaccinated it was 15·3%.

Allowing for uncertain factors, most authorities have the impression that oral vaccination lowers the death-rate from tuberculosis in the first year of life. More reliable evidence comes from smaller series, where the vaccine was given by injection and controls were adequate: in Gothenberg B.C.G. was from 1927 given intracutaneously to all children of tuberculous families, normally at birth and otherwise up to the age of 6–7 years. Subsequent observation was complete for all children to the end of 1932. The infant death-rate from tuberculosis from 1912 onwards was used as a basis for

TABLE III—DEATHS FROM TUBERCULOSIS IN INFANTS AND FROM PULMONARY TUBERCULOSIS IN ADULTS, AT GOTHENBERG

Group	Deaths per 10,000					
	1912–16	1917–21	1922–26	1927	1928–32	1933
Infants ..	43	42	34	39	14	3
Adults ..	20	17·6	13·5	12	11·4	10

Infants were vaccinated with B.C.G. from 1927.

comparison; this rate shows a sharp drop beginning in 1928, while the adult rate for pulmonary tuberculosis shows only the gradual fall observed throughout the world (table III).

The immunisation of uninfected young adults exposed to abnormal risks of infection, such as, for example, nurses and medical students, has yielded equally definite evidence of the efficacy of B.C.G. This development originated chiefly in the studies of Heimbeck on pupil nurses at Ulleval Hospital, Oslo. His results and those of similar studies in other countries have caused the traditional belief that adult disease represents an extension of childhood infection to be replaced by a growing conviction that in the young adult it is much more commonly the result of a new infection, either in a person previously uninfected or in one who has been infected in childhood and, having recovered completely, has lost all allergy and immunity in the intervening period. At Ulleval Hospital, 50–60% of pupil nurses were found to be non-reactors on entry, but their susceptibility was proved by most of them becoming reactors within the first year of hospital life, and all within the three years of training.

Table IV indicates not only the greater probability of tuberculous disease occurring in the previously non-infected but the higher risk of infection run by nurses in hospital, as compared to women in the general population. It is now being accepted that (1) adolescents and young adults, particularly women, who are non-reactors to tuberculin are more susceptible to tuberculous infection than those in whom previous infection is indicated by a positive reaction; and (2) young adults in frequent contact with tuberculous patients are exposed to a greater risk of tuberculous infection and disease than is the general population. The Oslo figures leave little doubt that the non-reactor nurses who were vaccinated enjoyed

TABLE IV—INCIDENCE OF ALL FORMS OF TUBERCULOSIS IN NURSES AND IN GENERAL POPULATION

Group	Cases	Observation-years	Tuberculosis (per 1000 observation-years)	
			Disease	Deaths
Nurses at Ulleval:				
Tuberculin-positive at entry ..	625	2659	10·1	0
Tuberculin-negative at entry —				
Not vaccinated	280	561	171·0	17·8
Vaccinated, B.C.G.—				
Becoming positive ..	287	910	8·8	1·1
Remaining negative ..	107	204	107·9	9·1
Females, aged 13–24 years, general population, Oslo:				
Tuberculin-positive	467	2111	6·6	0·5
Tuberculin-negative	991	4697	11·1	0·6

For calculation of observation-years, tuberculin-negatives remained classed as such to one year after showing a positive reaction, on the basis that any disease observed during that year is part of the primary infection.

a large advantage over the non-vaccinated. Moreover, this advantage was related to the development of allergy following the vaccination; it was much slighter among those who remained non-reactors, which strongly suggests that the effect was one of true specific immunity.

The following conclusions on the efficacy of immunisation by B.C.G. appear to be justified.

1. Statistical data derived from oral vaccination of the newborn are unsatisfactory because of uncertainty of B.C.G. infection, lack of control, and difficulty of separating specific from non-specific factors. But there can be little doubt that the vaccinated groups—perhaps two to three million in all—have shown a decidedly lower mortality from tuberculosis during childhood years than non-vaccinated infants in the same communities.
2. The smaller, but much better controlled, series based on parenteral injection of B.C.G. in children yield a similar but more precise result.
3. The data collected from systematic observation of pupil nurses show, first, that the risk of developing tuberculous disease is greater in the non-reactor than in the already infected reactors; and, secondly, that among original non-reactors who have been vaccinated with B.C.G., the disease has been reduced to a level approaching that among the reactor group.

DURATION OF IMMUNITY

Information on the duration of immunity following B.C.G. vaccination is scanty. Calmette and most of his

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contemporaries suggested that it was of the order of 2 to 4 years at the most; but recent series from Norway and Sweden suggest that with improved methods of application, the duration, by inference from that of allergy, may be five to six years or more. Calmette believed that immunity outlasts allergy. With human vaccination the only event that gives any precise evidence of the duration of immunity is the disappearance of the positive tuberculin reaction; but according to Calmette, this is not proof that immunity has vanished. At the same time, a continued absence of natural infection is no proof that immunity still exists; nor, on the other hand, is occurrence of natural infection, whether the reaction be positive or negative, proof that no relative immunity exists.

Recent large-scale vaccinations in Norway and Sweden show both higher reactor-rates and longer persistence of allergy than did earlier series; but on the whole the proportion of reactors has been decreasing somewhat after 2–3 years. The longer a strongly positive reaction persists after that time, the greater is the presumption that natural infection has occurred; and if there is a marked or sudden enhancement of the reaction, the presumption becomes very strong. But an enhancement of B.C.G. immunity by a natural infection which the vaccinated subject can resist is an expected and desired event, and where a positive reaction persists indefinitely, no further immunisation is indicated. Only where a positive reaction following vaccination has disappeared is revaccination called for; and if the Mantoux reaction is completely negative at O.T. 1 in 100, there is no contra-indication. Calmette suggested that revaccination should be undertaken at 1–3 years, and possibly again between 7 and 15 years, but a more reliable system would seem to be yearly testing, with revaccination of completely negative reactors. This question requires further investigation.

METHODS, DOSAGE, AND LOCAL LESIONS

Whatever the method of vaccination, it is essential that the subject, whether previously infected or not, should be non-allergic at the time; and the possibility of allergy developing shortly after vaccination, due to infection in the previous 4–6 weeks, should be excluded by segregation from tuberculous contact. The new-born are assumed to be non-infected and non-allergic. This rule does not appear to be observed in the case of nurses and other adults. Calmette prescribed a further segregation of one month after vaccination to allow immunity to develop, but this has often been neglected. Wallgren has emphasised the irregularity in duration of the pre-allergic stage, and insists that the post-vaccination segregation should last until a positive reaction is obtained; those still negative at 6–7 weeks are revaccinated.

For oral vaccination, Calmette prescribed three doses of 100 mg. each, given on the 4th, 6th, and 8th or 5th, 7th, and 9th days of life. Few symptoms resulted, but polyadenitis was occasionally observed.

For subcutaneous injection, small doses of 0·01–0·05 mg. have been generally favoured. The relation of abscess-formation to dosage is reputedly irregular, but the risk of it is diminished by deep injection into loose subcutaneous tissue, as in the axillary region. With small doses, abscesses have developed in about 30% of those vaccinated.

For intracutaneous injection, Wallgren used doses of 0·05–1·0 mg., and observed no troublesome lesions. Foci seldom exceeded pea-size, with slight liquefaction, and healing ensued in a few weeks. Others, while agreeing that larger doses are tolerated by the intracutaneous route, and recommending 0·15 mg. as the optimum dose, report more serious reactions; abscesses in about 6% of those vaccinated were recorded in a recent series.

In 1939 Rosenthal described his method of tangential needle punctures made through B.C.G. suspension spread on the skin in a concentration of 5 mg. per c.cm. Négre and Bretey confirmed his successful animal experiments, but replaced the repeated needle punctures by superficial linear scarification with a vaccine stylet, through a B.C.G. suspension of the same concentration. Four drops of B.C.G. suspension are placed on the skin, and through each drop two linear cuts are made at right angles, each 1·5 cm. long. The local reaction is usually slight, reaching a maximum at 10–30 days. There is no appreciable lymph-node enlargement; and after 2–6 months the site is sometimes not identifiable.

With the puncture method, over 95% have reacted at 2 weeks, and 100% at 4 weeks, and the reaction has been maintained for over a year. In 3·8% of another large series, pus was noted in the small papules that develop, but the lesions healed promptly. The method of repeated punctures is probably slower than scarification, but an automatic spring instrument, making 40 punctures at one stroke, has been devised. Each of these two transcutaneous methods appears to be preferable to both the subcutaneous and intracutaneous methods, in freedom from abscess-formation and in rapidity of appearance, degree, and duration of the allergy produced; they appear, moreover, to confer rather better immunity.

PREPARATION OF VACCINE AND SAFETY CONTROLS

The original loss of virulence of B.C.G. was ascribed to prolonged culture on bile media, and, after 1921, when the strain was found to be completely avirulent, it was still laid down that it should be periodically returned to bile. The culture was maintained on glycerin veal-broth potato, subcultured every 20 days; but after each 10 such passages, two successive subcultures were made on glycerin ox-bile potato. In 1930 Calmette omitted the return to bile, and used the glycerin veal-broth for maintenance; this is still the practice in some countries, while in others bile media, Sauton fluid media, or glycerin-egg media are employed.

Calmette recommended that cultures used for suspensions should not be older than 20–25 days. Small quantities are prepared direct from potato cultures, larger amounts from bulk cultures on Sauton media. Suspensions should be used within a week of preparation.

Control Measures in Production.—Because the suspension depends for effectiveness on the development of a minimal actual infection from living bacilli, neither heat nor antiseptics may be used to exclude pathogenic contamination; moreover, animal tests for virulence or contamination cannot be completed before the vaccine is used. Consequently strict control of production is essential. The conditions for safety are these:

1. Lack of capacity of the B.C.G. strain to produce progressive disease. The avirulence of B.C.G. is now well established, but animal inoculation should be undertaken once for each batch to meet possible claims arising where tuberculous disease appears within a year or two of vaccination.
2. Absence of contamination by virulent tubercle bacilli from outside sources. Since the Lübeck disaster, it has been accepted that preparation should be carried out entirely in a laboratory, and preferably in a building into which no other culture of tubercle bacillus and no tuberculous material are allowed to enter. Infected workers must be excluded by examination, and masks must be worn at appropriate stages. All apparatus must be reserved exclusively for B.C.G. preparations.
3. Absence of other pathogenic bacteria. Aerobic and anaerobic cultures before the issue of the suspension should provide sufficient test. All infected material and all cultures should be excluded from the laboratory, and masks should be worn when the suspension is exposed.

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4. It is also desirable to control the retention by the culture of the power to provoke local lesions. Jensen, in Denmark, inoculates guineapigs intracutaneously with doses of B.C.G. graded from 0·01 mg. to 0·0001 mg.; his stock strain gives frequent nodules at 0·001 mg., and large ones at 0·01 mg.

GENERAL STATEMENT

The bodies sponsoring the memorandum ask that the use of B.C.G. should be encouraged, but feel strongly that its employment should not be allowed to discourage the search for more efficient means.

When Calmette advocated the administration of B.C.G. to newborn infants, he believed that it would provide sufficient protection to prevent a natural infection during the first year or two of life, and that sufficient resistance would remain to enable later infections to be overcome and to leave in their turn the higher grade of immunity associated with such recovery. This sequence represents perhaps the most effective result which any form of artificial immunisation can produce. B.C.G. vaccination was advocated especially for children exposed to special risks, and it has been among these that the most successful results have been claimed in France.

Another application of preventive inoculation is the immunisation of adolescents and young adults who are non-reactors to tuberculin. The value of pursuing this aspect has been shown in the vaccination of young nurses in Norway, where immunisation of non-reactors has been followed by a significant decrease in morbidity- and mortality-rates as compared with unimmunised non-reactors, though both rates remain higher in the vaccinated than among the naturally infected reactors. The need for vaccination of this group in Great Britain is shown by the reports of the Prophit Trust investigations. The suggestion is that it should be available, though not compulsory, for non-reactor nurses. This would provide not only a practical safeguard against tuberculosis but a controlled investigation of the first value; there is little doubt that the results would be substantially the same as those obtained in Norway.

The introduction of the transcutaneous method, with its elimination of local abscesses, is felt to be an advance of the first importance; up to 1944 Birkhaug vaccinated 1500 persons with a spring-actuated puncture instrument; 98% became reactors and abscesses developed in none. There appears now to be no reason why B.C.G. vaccination should cause greater inconvenience, or rouse greater prejudice, than does prophylactic immunisation against diphtheria.

It is believed that:

1. The harmlessness of B.C.G. is established beyond doubt.
2. A very considerable degree of immunising efficiency is indicated by the most reliable results from other countries.
3. There exists in tuberculosis services and among the medical profession generally a desire that a reliable supply of B.C.G. vaccine should be available here, as it has been for years in other countries of the world.
4. The application by multiple puncture or by scarification promises to remove the risk of local abscesses, which has been one of the most serious obstacles to the general use of B.C.G.

On these grounds it is requested that the supply and use of B.C.G. vaccine in Great Britain should be facilitated and encouraged.

In the production of B.C.G. for general use it appears to be essential that: (1) the material should be actually safe; (2) there should be public confidence in its safety; and (3) control of production should be such that any claim of tuberculous disease being due to vaccination should be refutable with certainty. It is believed that, to attain these objects, there should be a single source of supply for Great Britain and that commercial competition should be avoided. It is also felt that the product should be supported with official backing, by being prepared under the auspices of a Government department or the Medical Research Council, or by certification of the methods employed which should be provided by an official department, such as the standards department of the Medical Research Council. Failing manufacture under Government auspices, it is felt that production should be controlled by some scientific organisation of national repute, which should be subjected to official supervision and certification. Considering that in Norway, during enemy occupation, the number of vaccinations was increased from 603 in 1939 to 17,579 in 1944, it does not seem impossible that an adequate and reliable supply should be forthcoming in Great Britain.

SOCIAL AND ECONOMIC RESEARCH

NEEDS AND MEANS

A COMMITTEE has been considering "whether additional provision is necessary for research into social and economic questions." Its report[1] doubts whether, even yet, the practical value of knowledge in these various fields is generally appreciated.

"It is a platitude that modern industrial communities rest on a knowledge of the subject matter of the natural sciences. It should be also a platitude that their smooth running and balance rest upon a knowledge of the subject matter of the social sciences. . . . In simpler societies it may have been safe to base social policies on hunch and traditional wisdom. But in more complex conditions such a basis is not enough. Hunch would never have unveiled the demographic tendencies which are among the most pressing problems of our day; the conduct of modern financial policy involves much more than traditional wisdom. Neither the net reproduction rate nor the net national income at factor cost is a concept which could have been elaborated without systematic study and research."

Even where the importance of this kind of knowledge is recognised, it is doubtful whether there is a parallel recognition of the importance of providing the resources which make it possible. "Here, at any rate, the universities are under-staffed and under-endowed; the idea that provision for research in these fields by way of libraries, calculating machines, computors, and research assistants, is as important as provision for laboratories and experimental stations seems still to present an appearance of novelty and paradox." The number of universities in which there is continuous provision for research in social questions is still extremely small. Yet the prospects of tangible return in national welfare are at least as great in the social as in the natural sciences. With the national income running at its present rate, the discovery of knowledge which made possible the reduction of the average of unemployment by as little as 0·5% would mean a gain of at least £40,000,000 per annum.

While the increase of facilities for independent research must always be a prime objective, much of the collection of material necessary for the establishment of correct views on social and economic questions can only be satisfactorily performed by Governments. "It would be futile for universities to attempt to carry out a census." In the nineteenth century British official statistics led the world, but in the twentieth century their comparative performance has not always been so good. The blame must rest squarely upon Governments and the public who have failed to recognise the importance of progressive improvements of methods and the great unwisdom of cheese-paring financial measures. In the last few years, however, the exigencies of war and a gradual enlargement of views as to what is essential as a basis for running the complex machinery of a modern State have brought about changes, both in the machinery for collecting information of this sort and in the provision of organs for its systematic survey, and the committee is satisfied that, unless present arrangements and plans are upset in some future economy campaign, the provision for research within the governmental machine is much

1. Report of the Committee on the Provision for Social and Economic Research. (Chairman: the late Sir John Clapham.) Cmd. 6868. H.M. Stationery Office. Pp. 15. 3d.

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more likely to be hampered by the lack of availability of properly trained staff than by the lack of realisation of the importance of the work to be done. To prevent overlapping, and also to ensure that the material available is exploited from every point of view, the committee would like to see an Interdepartmental Committee charged with the duty of bringing to the notice of departments the potential value for research purposes of the material which they collect and suggesting new methods and areas of collection.

Outside the governmental machine the existing provision for research is not sufficient as regards (*a*) staff, and (*b*) resources to enable what staff there is efficiently to pursue its researches. The committee found that in the universities and university colleges of Great Britain there were some 52 professors and readers in the social sciences, whereas in pure science there were 296 and in medicine 176. Excluding certain outlays by Oxford and Cambridge, in round thousands some £116,000 was spent on provision for the social sciences, as compared to £987,000 for pure science and £886,000 for medicine. To the private enterprise of various scientific and educational foundations we owe what provision exists already for organised research institutes or divisions, and the committee remarks:

"We believe that the great foundations which have brought succour to the social sciences in this country have been administered with vision and imagination. . . . Nevertheless we cannot regard as satisfactory a state of affairs in which important branches of knowledge receive little or no routine allocation for, as it were, laboratory expenses, but are permitted by their universities occasionally to pick up what they can by appeals to outside foundations, some of which draw their funds from sources abroad."

Two things are therefore necessary:

"First, there should be an increased provision of resources; secondly, the increase should be *on a permanent and routine basis*. The universities, being placed in possession of more funds, must come to see, not only that more chairs, readerships and lectureships are desirable in respect of the social sciences, but also that the holders of these posts should be as entitled to the necessary equipment and assistance for carrying out researches in their field as the holders of posts in the natural sciences are in theirs."

On the question of finance the committee thinks that, while the universities should spontaneously initiate developments, the University Grants Committee should take it as part of its duty to survey systematically the range of work in this field undertaken by the several universities, and, if gaps are revealed, to offer such stimulus as may be necessary to secure that they are filled. "That is to say, that, just as in relation to medical education and research the University Grants Committee has reinforced itself by a special medical advisory subcommittee, it should do the same, so soon as is practicable, in relation to the social sciences. This plan involves no interference with either the initiative or the autonomy of the universities."

The committee turns down, for the present, the proposal that there should be established an official Social Science Research Department or Council parallel with the Department of Scientific and Industrial Research, or the Medical Research Council, which should distribute grants and coördinate research activities.

"The chief need of the social sciences at the present time is the strengthening of staff and provision for *routine* research. The existing research councils have never assisted research carried out as a normal routine function, nor are they suited to do so. Moreover the social sciences, although rich in promise, have not yet reached the stage at which such an official body could be brought into operation without danger of a premature crystallization of spurious orthodoxies. Their scope is as yet too ill-defined and the output too inadequate for a formal coördinating body to be appropriate. Yet another reason which has influenced us is that, the whole field being understaffed, we do not wish to see the best men—only the best would be of any use for such difficult work—diverted from doing research to coördinating research. . . . What is needed at this stage is more work at the universities."

The committee is convinced that its own suggestions—the mixed interdepartmental committee to advise upon research within the machinery of government, and the subcommittee of the University Grants Committee to advise and foster development within the universities—are "likely to obtain far more general support than any attempt at this stage prematurely to imitate the official research departments and councils of the natural sciences."

THE WORLD HEALTH CONFERENCE

FROM OUR SPECIAL CORRESPONDENT IN NEW YORK

THE conference, having been at work continuously for a month, is now within sight of the end, and the tired delegates can soon expect deliverance from the heat and humidity of New York City.

When signed, the protocols will set up an Interim Commission, which will take over UNRRA and the Office International d'Hygiène Publique, and which will in turn give place to a permanent World Health Organisation.

Membership of the W.H.O. will differ sharply from that of the United Nations. Members of the U.N. may join the W.H.O. by signing the new constitution. States whose governments have been invited to send observers to the present conferences—e.g., Siam, Eire, Austria, and Sweden—may join by the same procedure of signing. Countries, such as Spain, which have not been invited to send observers may attain a state of grace when their applications have been approved by a two-thirds vote of the World Health Assembly. Territories or groups of territories which are not responsible for the conduct of their international relations may be admitted as associate members. It is probable that associate members will have neither the right to vote nor the right to hold office.

The work of the W.H.O. will be carried out by the World Health Assembly, the executive board, and the secretariat, the last of these including the director-general and the administrative and technical staff. In the World Health Assembly each member State will have one vote, although three delegates may be sent by any State and there is no limit to the number of alternates and advisers allowed. Meetings must be held at least once a year. The assembly determines policies, appoints the director-general, and adopts international agreements. The detailed procedure of ratification has not yet been settled completely. The assembly has the authority to adopt regulations concerning sanitary and quarantine requirements, standard nomenclature of diseases, pharmacopœias, and the advertising of drugs which pass in international commerce. Both in the question of "contracting out" of regulations and of voting in the assembly—now to be by two-thirds in important questions and by simple majority in others—the Russian delegation showed an accommodating attitude in adopting a view contrary to the opinions they originally expressed. The assembly also has the power to promote and conduct research, in its own institutions or in coöperation with institutions of members.

The executive board will consist of 18 members, each of whom will serve for three years. The board is the executive organ. It will advise the assembly on questions referred by that body. It will submit plans and programmes of work, as well as agenda for meetings.

The director-general is appointed by the assembly on nomination of the board. He is the chief technical and administrative officer of the W.H.O., and is ex-officio secretary of the assembly, the board, and all committees and conferences. The director-general appoints the staff of the secretariat and prepares the budget.

From time to time the assembly will define the areas in which it desires to establish a regional organisation. These regional entities will be integral parts of the W.H.O. Each will consist of a regional committee of members and associate members and a regional office headed by a regional director. The Pan-American Sanitary Bureau and the Pan-American Sanitary Conference will be integrated with the W.H.O.

Each member must report annually on the action taken and progress achieved in public health and on important public-health laws and regulations. Each member must also provide statistical and epidemiological reports in a manner to be determined by the organisation.

Such is the skeleton of the new animal. Its viability must await the test of time, but confident predictions are being uttered by its accoucheurs.

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Letters to the Editor

INTERIM

SIR,—Medical officers who have just been released from the Services where they had been trained, or were training, as specialists are finding difficulty in obtaining work in civilian life for which they are fitted, and their predicament has been causing us much concern. We are impressed not only by the individual hardship involved but also by the fact that these men may be driven to abandon their plans for specialisation at a time when there is a great dearth of specialists in every branch of medicine and surgery. In this fashion a reservoir of most useful recruits for the consultant service of the future will be lost.

The men concerned fall into two groups.

Group I consists of about 800 men who were being trained as consultants, and have perhaps acted as graded specialists. They are about 28–33 years old, and they have either taken or are preparing for higher qualifications. They are now acting as registrars at teaching or other hospitals where they are paid £550 plus £100 for maintenance. We propose that their term of office should be extended, if they so desire, until the Bill comes into operation, provided that the postgraduate deans who selected them are satisfied with their work.

Group II is an older group of men who have been qualified perhaps for ten years or more, and some of whom are nearly forty years of age. Nearly all of them have consultant qualifications. We ask the Ministry of Health to create for these men a number of more senior salaried whole-time appointments. Since their appointments will occupy all their time, these men will not compete for private practice with the other unpaid assistant physicians and surgeons on the staff of the hospital. Hospitals would be asked how many posts of this kind they need, and the appointments would be made by a small committee in each region. The term of office would end when the new service begins.

We believe that these proposals should in some measure mitigate the uncertainties of the present time, while the country would surely gain.

MORAN
President, Royal College of Physicians.
ALFRED WEBB-JOHNSON
President, Royal College of Surgeons.
EARDLEY HOLLAND
President, Royal College of Obstetricians and Gynæcologists.

TEACHING IN CHILD HEALTH

SIR,—Your leading article of July 6 summarises the Edinburgh plan of teaching the problems of health in infants and children (as distinct from those of disease). As this particular kind of pædiatric teaching is being considered at present both by the medical schools and the General Medical Council, its public discussion in THE LANCET is valuable, and I am grateful to you for bringing it into general notice.

Will you allow me to make some comments upon what you have said and add some further explanations of the Edinburgh plan? This plan is the fruit of twenty years' clinical experience of the newborn and of an associated child-welfare clinic. The programme of teaching is designed for the needs of what you call "the potential general practitioner"; it is based on the fact that it is in the home that the issue of child health and disease is decided, and on the firm conviction that the family doctor, *working in the home*, can control this issue better than any other medical person, and that he wishes to do this.

The plan is as follows. After some systematic lectures, a class of students enters upon the clinical course of child health. This consists in eighteen meetings: eight given in the care of the newborn and in neonatal diseases; ten in the problems of the older infant and child; and all at the maternity hospital. There is a definite programme of instruction, and a regular sequence of subjects. There is a basal training concentrated upon a uniform method of clinical assessment of health (physical and mental) in the successive ages of childhood, the principles and application of infant and child dietetics, and the instruction of the mother in the care and the physical and mental education of her child. The detection and treatment of minor ailments is included but is only accessory to the main theme. All teachers taking part present these basal principles and techniques in the same way.

Your criticism of the large number of students (70) is a little misleading. The total class is always subdivided. The basal techniques are demonstrated in a small lecture-theatre on selected typical cases and material to half the class (30–35). Thus of the ten meetings devoted to the older infant and young child, six are devoted to these basal clinical demonstrations. Children of school-age are included. (The fact that they are not examined *in a school* is not material; because the health of the school-child is determined in his home, and can be assessed and controlled there by his family doctor.) The remaining four meetings are given in the sessions of the hospital child-welfare clinic to small groups of 10 students gathered closely round mother, child, and doctor.

In this way the future family doctor gets in one place a clinical introduction to the whole range of health problems from birth throughout childhood; and is tested in his proficiency in a professional examination. And at the same time he receives his clinical training in diseases of children and in obstetrics.

The advantages of this central health clinic for the training of the teacher and for study and research are equally great, indeed greater. Only in such a central clinic can we build up a complete training-school for all those whose lifework is to be devoted to the care of children—pædiatricians, medical officers of the municipal health services, health visitors, and midwives. And it is only at a maternity hospital, with the newborn providing the link with natal and antenatal pædiatrics, that we can get the full range of the clinical material of health in pædiatrics, and a progressive continuity of observation, record, and study from both onwards throughout childhood.

University of Edinburgh. CHARLES MCNEIL.

POLYARTERITIS NODOSA AND SYPHILIS

SIR,—The excellent article by Miller and Nelson [1] on polyarteritis nodosa developing during antisyphilitic treatment reminded us of a somewhat similar case which came under our care in 1942. Unfortunately we have no access to the detailed notes of this case, especially to the record of the antisyphilitic treatment he received.

In March, 1942, a soldier, aged 39, developed a chancre. He started regular treatment with bismuth and neoarsphenamine on the 19th. Before this he had had no arsenical treatment. His past history was irrelevant. Early in July he developed a mild transient jaundice, with aching pains in his muscles and joints, and on July 18 he noted that his knees were swollen. Subsequently his legs and ankles also became œdematous. Bismuth was not administered after July 18, nor neoarsphenamine after the 11th, by which time he had been given 4·2 g. of bismuth and 10 g. of neoarsphenamine.

At the beginning of August, 1942, he started to have transient but recurrent generalised colicky abdominal pains, and on several occasions he vomited a bile-stained fluid. He was admitted to hospital on Aug. 18, by which time the swelling of his legs had decreased considerably. The abdominal colic ceased after two weeks. On admission a blood-count showed red cells 3,300,000 per c.mm., Hb 68%, and white cells 20,100 per c.mm. (polymorphs 69%, eosinophils 9%). His urine was normal. By the 31st his Hb had increased to 96% and the leucocytes had fallen to 12,500 per c.mm. (polymorphs 86%, eosinophils 3%). On the 30th his right foot suddenly went numb and became paralysed, and his right ankle again became œdematous. On Sept. 10 his right hand became numb and his left hand was similarly affected a few days later. A lumbar puncture at that time revealed cerebrospinal fluid (C.S.F.) under normal pressure and containing total protein 60 mg. per 100 c.cm. and 18 polymorphs per c.mm. The Wassermann reaction in the C.S.F. was negative.

This patient came under our care on Sept. 15, 1942, when he was a pale, thin, ill-looking man, sweating profusely. He had a remittent fever of 99°–101° F, with tachycardia of 90–130 per min. His blood-pressure was 135/90 mm. Hg. No abnormal physical signs were found in his chest or abdomen except a palpable and tender liver margin. His legs showed considerable pitting œdema over both ankles, with wasting of the muscles below the knees.

1. Miller, H. G., Nelson, M. G. *Lancet*, 1945, ii, 200.

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There was complete paralysis below the right knee, and paralysis of the left plantar flexors, the extensors of the left foot and toes being considerably affected also. The muscles involved were not painful or tender. There was slight impairment of sensation to light touch and pinprick over the distal third of the legs and feet with a fading upper border, and considerable impairment of position sense in the toes. Vibration sense was absent below the middle of the right leg, though it was practically normal on the left side. No localised wasting or weakness of his arms was found, though there was slight impairment of sensation to pinprick over the distal parts of the forearms and hands. His nervous system was otherwise normal.

Urine was normal, and blood-urea was 32·5 mg. per 100 c.cm. Blood-count: Hb 82%, red cells 4,500,000 per c.mm., white cells 10,400 per c.mm. (polymorphs 78%, no eosinophils). Blood Wassermann reaction negative; Lange reaction normal.

Eight days later he complained of weakness of the left hand, when he was found to have developed considerable weakness in his finger flexors; but, apart from some loss in position sense in the right middle finger, no further alteration in sensation was found. By the end of September the œdema of the legs had disappeared. Urine was still normal. Blood sedimentation-rate 45 mm. in an hour. White-cell count: 10,000 cells per c.mm. (polymorphs 86%, eosinophils 1%).

Treatment with sodium thiosulphate, full vitamin therapy, and a course of sulphathiazole had no effect on his general or local state. Subsequently his condition gradually deteriorated, his fever persisted at the same level, he rapidly lost weight and appetite, and developed transient attacks of dyspnœa. His blood-pressure rose steadily to about 170/130 mm. Hg. His neurological signs persisted and became intensified; latterly he was completely paralysed below both knees and in both hands. The sensory loss became greater, leading to several small cigarette burns of the fingers. He became mentally confused and incontinent of urine at night. On Oct. 17 albuminuria was noted for the first time, though no other evidence of renal involvement was found, and at the end of October his blood-urea was still normal (38 mg. per 100 c.cm.). He died in coma on Nov. 20, 1942.

The diagnosis of polyarteritis nodosa was seriously entertained throughout the last six weeks of his illness, and necropsy amply confirmed this supposition, typical changes being found in the arterioles and smaller arteries of the mesentery, liver, stomach, kidneys, heart, lungs, &c. In the lungs the changes were confined to the bronchial vessels, the pulmonary radicles being unaffected.

This case is in many points similar to that described by Miller and Nelson, not only in the fully developed stage but also in the premonitory stages, when various reactions developed which might well have been due to hypersensitivity, innate or acquired, to the antisyphilitic arsenical preparations exhibited at that time.

J. W. ALDREN TURNER.
London. J. H. PATERSON.

RADIOLOGY IN GENERAL PRACTICE

SIR,—I have received a remarkable circular letter from a radiologist. The following are some of its more striking sections:

"In January and again in February I wrote to you and some 400 other doctors in this area notifying you that I had resumed radiological practice in this district. Excluding those doctors who were sending me work before the war the total fees produced by the two circular letters in the first four months of this year amount to four guineas. I have recently been appointed assistant radiologist at X . . . but this together with the small amount of private work at Y . . . brings in less than five pounds per week.

"It is not surprising that I am suffering from my full share of ex-Serviceman's disillusionment. I was reconciled to the loss of my pre-war general practice when I decided to invest my scanty savings in a complete X-ray installation, but I assumed that I should have no difficulty in making ends meet after the first few weeks. I appeal to you for the third and last time to send me an occasional case, as if this letter produces no better response than the previous ones I must abandon my attempt, sell my apparatus and seek a full-time appointment. . . ."

This circular forms a refreshing contrast with the recent attempts by many of the more vocal members of the profession to depict private practice as a kind of private paradise which must be defended at all costs against the serpent in the guise of Mr. Aneurin Bevan.

It is true that there are some commercially successful private radiologists, but in general the financial structure of private medical practice cannot carry the heavy overheads which are unavoidable in such branches of medicine as radiology. Paying their doctor's fee taxes the resources of the ordinary private patient to the utmost without the addition of costly radiological investigations. The general practitioner will no doubt turn increasingly to radiology as an aid to diagnosis, the more so because many have had free access to radiological opinion in the Forces. The present method whereby the ordinary doctor can only get an X ray done second-hand through a consultant, except for the few private patients who are rich enough to pay, is clearly unsatisfactory. The solution, as the circular letter suggests, is full-time appointments for radiologists instead of their having to waste valuable time touting for private patients. All the larger health centres should be equipped with an X-ray department as soon as practicable. The problem then will be to find radiologists rather than to find employment for them.

BRIAN H. KIRMAN.

DEMOCRATIC NURSING

SIR,—Mr. Sol. M. Cohen's timely article strikes at the roots of the whole problem of the future of our health services. Whatever we may think of the details of the Health Bill, of its inadequacies or compromises, no real development of the hospitals is possible unless we succeed in recruiting the necessary nursing and domestic staff. This cannot be done until we can offer wages and conditions of work that can compete with the counter-attractions of industry. We need men and women in the hospitals capable of responsibility and enthusiasm. We shall not get them without decent wages and working conditions. These must include a revision of the status and prospects of all hospital employees. The R.A.M.C. has produced hundreds of skilled men who would welcome the opportunity to carry on this work. Some of those who have tried to do so are leaving the hospitals in disgust and returning to industry. This is not only on account of low wages and long hours but owing to the off-hand way they are sometimes treated by autocratic members of the administrative nursing staff.

It is not enough, however, for doctors and matrons to change their attitude. The standing of workers in many industries that was achieved during the 1914–18 war has improved during this war in a more positive way through the Joint Production Committees. There is more to be considered than just the question of happiness referred to by Mr. Cohen: advance depends on a live trade-union movement and the activities of the shop-stewards on the job.

Hospital staff conditions will never be such as to encourage recruitment in the way we need until the hospital staff trade-union movement attains an influence comparable to the importance of the job to be done. And this will not happen without the interest and support of an educated public opinion. The solution of the nursing problem is only possible along the lines of increasing democracy and humanisation within the hospitals. Mr. Cohen has dealt with the human aspects, he leaves the question of democracy to be worked out by others. That way and that way alone lies progress.

London, W.3. RUSCOE CLARKE.

SHORTAGE OF NURSES

SIR,—There are many hospitals acutely short of nurses at present. With the reshuffle that has taken place with the gradual winding up of the Emergency Medical Services, the lack of nursing staff has resulted in the partial, or almost complete, closure of many wards. The experience of one such hospital is doubtless typical of many.

A particular emergency hospital knew on a certain date that two-thirds of its nursing personnel would be withdrawn. Some months before this was due to happen preliminary efforts were made to attempt to bridge the gap. The local authority was therefore asked to seek recognition of the hospital as a training

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school for nurses. It was pointed out that the emergency accommodation and amenities, while adequate for war conditions, must be improved to meet the standards laid down by the General Nursing Council. Certain plans were, therefore, drawn up, and in due course an inspection of the hospital was carried out by representatives of the General Nursing Council in the hope that recognition as a training school would be forthcoming. It is now three months since this inspection was made and the hospital has been reduced to little more than a nucleus. In the meantime the keenness and patience of the senior nursing staff, who are only too anxious to begin training, are wearing thin. Is it to be wondered that your note, in which the Minister of Health tells us that he is troubled by the lack of nurses and wishes to encourage the establishment of more training schools, adds to their feelings of frustration?

Is the General Nursing Council so inundated with applications for recognition that a decision from them takes as long, or longer, to obtain, than a decision from a Government department? Do those persons, either in local authorities, Government departments, or statutory bodies, such as the G.N.C., who are interested in hospital organisation, realise that they themselves, by procrastination, are stultifying the efforts of the good people trying to work in hospitals, who wish to get on with the job? It is still true that hope deferred maketh the heart sick.

PROTESTANT.

THE LONDON COLLEGE OF OSTEOPATHY

SIR,—I was greatly surprised to see in your issue of July 13 an advertisement inserted by the above college stating that it intended to teach osteopathy to registered medical practitioners.

Not so long ago the medical profession, with the help of the British Medical Association, very rightly fought and prevented the official recognition of osteopathy in England, on the grounds that fundamentally the basic principles were wrong and the teaching by the then existing college was inadequate. Presumably the osteopaths have put their house in order and now, at this time of unrest in medicine through the return of practitioners from the Forces and its transition into State medicine, hope to coax practitioners to take a nine months' course, for which a diploma may be given.

The erroneous basic principles of osteopathy are still there and surely it was a grave mistake that such an advertisement was allowed to appear in the columns of a medical journal.

There are several excellent books on manipulation by British authors. The benefits obtained in certain conditions by gentle manipulations without anæsthesia, or the more forcible ones with anæsthesia, are well known and practised now by many orthopædic surgeons and physiotherapists throughout the country.

It would appear that the British Osteopathic Association at this stage hope to gain official recognition by teaching and bringing into their ranks registered medical men. I consider it most important that the medical profession should at this time dissociate itself from this association.

London, W.1. W. E. TUCKER.

*** While sharing in general our correspondent's opinion of osteopathy, we accepted the advertisement for the following reasons. (1) A newspaper exists to provide information rather than suppress it, and the proposal of the London College of Osteopathy to run a nine months' course confined to registered medical practitioners should be known to the profession. (2) Practitioners who have completed their medical training and obtained a registrable qualification are entitled to choose for themselves whether they will adopt osteopathic, homœopathic, or any other methods of treatment. (3) The advertisement came from a registered practitioner, who is dean of the London College of Osteopathy, and was addressed specifically to readers who are registered practitioners and may therefore be supposed capable of forming their own opinions. (4) The profession is often accused of unwillingness to listen to ideas originating outside its own ranks. Refusal to announce the proposed course would have given colour to this accusation.—ED. L.

Obituary

ERNEST KAYE LE FLEMING

KT., M.A., M.B. CAMB., HON. M.D. DUBL. AND MELB., F.S.A.

ONLY a few weeks ago Sir Kaye Le Fleming's many friends in London were congratulating him on his appearance of full recovery from his ill health of a year ago, and they were dismayed to hear of his death on July 16.

Born in 1872 at Tonbridge, and educated at Tonbridge School and Clare College, Cambridge, he studied medicine at St. George's Hospital, where, after qualifying in 1898, he filled the posts of house-physician, house-surgeon, and assistant surgical registrar. He showed his versatility by playing golf for his university against Oxford and by editing for a time his hospital's *Gazette*. In 1901 he settled in practice in Dorset where he quickly built up a large medical connexion. Soon, however, he began to make his influence felt farther afield. He was elected to the council of the British Medical Association, and his acumen and business capacity were so evident that in 1931 he was elected chairman of the association's representative body. After filling this post for three years he was elected chairman of the council, and fulfilled the onerous duties of the office with such distinction that in 1941 he was awarded the gold medal of the association. He acted as chairman of the B.M.A. Committee on Nutrition which in 1935 published a report that did much to instruct public opinion by calling attention to the need for an increase in the dietary of many undernourished people. In the following year he served in a similar capacity on the B.M.A. Committee on Physical Education, whose report helped to bring this neglected subject into prominence. His special knowledge led to his membership of the National Advisory Committee for Physical Fitness and of the Central Council for Physical Recreation. In 1932 he was given the honorary degree of M.D. by Dublin University and in 1935, when visiting Australia, received a similar honour in Melbourne. In 1937 he was knighted.

Lafayette

Le Fleming was tall and of fine bearing, of kindly disposition, cautious in judgment, measured in speech, equable in temperament, and wise in counsel. He won the respect of all those with whom he came in contact, and for many years he exerted great if unobtrusive influence. Though he did not write much, he put his valuable experience at the service of the profession in his *Introduction to Medical Practice*, published in 1936. He retired from the post of chairman of council of the B.M.A. in 1939 and thereafter the amount of his public work gradually diminished. To the last, however, he maintained his interest in public affairs and in his favourite hobby of antiquarian research. He married in 1901 and had two sons.

Infectious Disease in England and Wales

WEEK ENDED JULY 13

Notifications.—Smallpox, 0; scarlet fever, 845; whooping-cough, 2270; diphtheria, 277; paratyphoid, 17; typhoid, 6; measles (excluding rubella), 3981; pneumonia (primary or influenzal), 416; cerebrospinal fever, 33; poliomyelitis, 12; polio-encephalitis, 0; encephalitis lethargica, 5; dysentery, 61; puerperal pyrexia, 149; ophthalmia neonatorum, 69. No case of cholera or typhus was notified during the week.

Deaths.—In 126 great towns there were no deaths from scarlet fever, 2 (0) from enteric fever, 2 (0) from measles, 12 (2) from whooping-cough, 2 (0) from diphtheria, 39 (4) from diarrhœa and enteritis under two years, and 5 (1) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 215 (corresponding to a rate of 25 per thousand total births), including 18 in London.

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Public Health

The Tuberculous in Birmingham

THERE are some 5000 known cases of lung tuberculosis at large in the community of Birmingham, and about half of these are capable of infecting other people. The public-health committee of the city, who give these figures in a recent report,[1] have proposed plans for developing the tuberculosis service, and for providing reablement, employment, and housing for the tuberculous. The hospital surveyors reporting on behalf of the Ministry of Health in 1945 said that developments in Birmingham had been piecemeal, patients being treated in four tuberculosis hospitals and sanatoria. This has led, the surveyors thought, to extravagance in staffing and undesirable economies in equipment—three of the sanatoria lacked X-ray plants—and they suggested that these institutions should be replaced by one large sanatorium. The public-health committee believe there are valid arguments against such a plan. In a single institution of 1656 beds—the number judged to be needed—the medical superintendent could not know each convalescent patient as he should. They feel it would be better to have one central relatively large institution for preliminary observation and treatment, whence patients could be sent to smaller sanatoria for convalescence.

At present only 811 beds are available, so the plan contemplates a service more than twice the existing size. The Yardley Green Road Sanatorium is to be enlarged to form the central admission centre and treatment hospital, from which women patients will go to Romsley Hill Sanatorium and men to West Heath. Children are to be admitted direct to a much enlarged sanatorium at Salterley Grange, which would receive cases of all types. Yardley Green is near the centre of the city, but the other advantages of the site are thought to outweigh this disadvantage, climatic conditions being favourable and the hospital easily accessible to patients and friends; moreover the span of treatment in this central institution is expected to be short, patients soon being transferred to the cleaner air of the outlying sanatoria. It is somewhat disappointing to learn that the committee have rejected the recommendation of the hospital surveyors that this central institution "should be closely linked with the University Thoracic Unit," in so far as that would imply that the thoracic unit at the sanatorium should be closed down; though so far as staff and professional coöperation are concerned there would be the closest linkage. Chest operations, the committee consider, must be regarded merely as an incident in treatment, and it would not be in a patient's interests to send him for treatment to "a clinic not concerned with his tuberculous condition as such, but merely as a subject for special surgery." They therefore propose to continue and extend the thoracic surgery unit at Yardley Green Road.

Both the outlying sanatoria are to develop reablement. At Romsley Hill there will be workshops for 100 patients, and at West Heath workshops for 150. Diversional therapy will begin at Yardley Green Road, and at the outlying sanatoria vocational therapy will succeed it as soon as the patient is well enough. Workshops properly equipped and staffed will fit the patient either for his return to his own work or for the work which he will finally be able to undertake. In addition, the Disabled Persons Corporation Ltd., established under the 1944 Act, is to set up a factory where tuberculous people can be employed under sheltered conditions. Some will live at home and work at the factory, while others will live at hostels in Yardley Green Road Sanatorium. The committee also hope to gain the help of the estates committee in considering arrangements for housing appropriate tuberculous patients who live at home.

The whole programme, though it may appear ambitious, does not go beyond the needs of the city if tuberculosis is to be brought under control; and the committee rightly pay tribute to Dr. Geddes, the chief clinical tuberculosis officer, on whose thorough and painstaking review their recommendations are based.

1. Report of the Public Health and Maternity and Child Welfare Committee to the City Council of Birmingham, June 4, 1946.

Notes and News

WORLD FEDERATION OF SCIENTISTS

A TWO-DAY international conference, attended by delegates and observers from 14 countries and 18 organisations, was opened in London on July 20, to found an international federation of scientific workers. The objects of the federation, in whose foundation the British Association has taken the initiative, include the fullest utilisation of science for promoting peace and human welfare; the application of science to the solution of urgent problems, such as the peaceful use of atomic energy and the rehabilitation of devastated countries, and to the problems of undeveloped and colonial countries; the promotion of international coöperation in science and technology; and the exchange of scientific workers and knowledge. Prof. Joliot-Curie (Paris) was elected president; Academician N. N. Semenov (Moscow) and Prof. J. D. Bernal, F.R.S. (London), vice-presidents; and Mr. Harlow Shapley, PH.D. (United States), treasurer.

MEMORIAL TO NURSES AND MIDWIVES

MORE than £17,000 has already been raised towards the memorial fund instituted seven months ago (*Lancet*, Jan. 12, p. 75) for the nurses and midwives who fell in the war. The first object of the fund, whose patron is the Queen, is to furnish a chapel in Westminster Abbey to house the roll of honour of those who have fallen. Gifts in excess of the sum required for this purpose (about £5000) will be used to form a fund to benefit the nurses and midwives of the Empire and Commonwealth. The hon. secretary is Miss J. Elise Gordon, editor of the *Nursing Mirror*, which is paying all administrative expenses; and the address is Dorset House, Stamford Street, London, S.E.1.

BRITISH-SWISS MEDICAL CONFERENCE

THE speakers at the conference to be held in Basle on Sept. 16–21 have now been announced. The British speakers will include: Sir Hugh Cairns, neurosurgery; Dr. E. A. Carmichael, man in relation to his environment (heat and cold); Prof. E. C. Dodds, F.R.S., synthetic œstrogens in relation to cancer; Dr. N. Hamilton Fairley, F.R.S., tropical diseases with special reference to the prevention of malaria and typhus; Prof. A. C. Frazer, normal and defective fat absorption in man; Dr. Donald Hunter, industrial medicine; Prof. R. A. McCance, nutritional problems; Dr. John McMichael, circulatory problems; Mr. J. J. Mason Brown, arterial surgery; Dr. J. S. Mitchell, experimental radiology; Dr. R. R. Race, the rhesus factor; Sir Reginald Watson-Jones, surgical rehabilitation; and Prof. F. G. Young, D.SC., experimental diabetes. Among the Swiss speakers will be: Prof. E. Grasset, primitive tuberculosis, primary infection and "premunition"; Prof. L. Rüedi, acoustic trauma, its origin and prevention; Prof. R. Meier, specificity and differentiation of sympathicotropic drug action; Dr. J. E. Wolf, combined climatic and surgical treatment of the lungs; Prof. H. Mooser, twenty years of research in typhus; Prof. A. Fleisch, nutrition in Switzerland during the war; Prof. A. Vannotti, adaptation of tissue respiration to effort and altitude; Prof. H. Krayenbühl, immediate and ultimate results of carotid ligation in intracranial aneurysms; Prof. F. Verzar, muscular efficiency; and Prof. H. Rossier, cardiac localisations of thrombo-angiitis obliterans. Further information may be obtained from the Royal Society of Medicine, 1, Wimpole Street, London, W.1.

CONCESSIONS TO NURSING ORDERLIES

LIKE the General Nursing Council for England and Wales, the General Nursing Council for Scotland has now agreed that ex-Service men and women with first-class qualifications as nursing orderlies shall be allowed to sit for the State examination after an intensive course lasting a year, and the Department of Health for Scotland is arranging courses at two hospitals. Students granted this concession must have had the same experience as those seeking it in England—namely, two years' experience of nursing in a Service hospital under a State-registered nurse, and one of the following Forces qualifications:

Nursing orderly, class I, or nursing member, class I (Army).
Leading sick berth attendant (Navy).
Leading aircraftman or aircraftwoman in the trade of nursing orderly (Royal Air Force).

Men and women who have had two years' experience of the kind but do not hold one of these qualifications are eligible for six months' remission of the three-year course for State

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registration, or can be enrolled immediately, without further training, as assistant nurses.

Scottish courses begin in October at Law Junction Hospital, near Wishaw, and Stracathro Hospital, near Brechin. Temporary nursing work until the beginning of the course will be found for those who want it. Men and women still in the Forces should apply through Service channels; those who are already demobilised should get an application form from the Department of Health for Scotland (Nursing Branch), St. Andrew's House, Edinburgh.

IMMUNISATION AGAINST DIPHTHERIA

THE Ministry of Health announces that the number of children immunised against diphtheria last year under the local authorities' scheme was 613,329—an increase of 52,015 on the total for 1944. The number immunised since the national campaign was launched five years ago was 5,979,284.

There were 720 deaths from diphtheria last year, and 25,223 cases. These are the lowest figures ever recorded. In every year since the campaign got under way, a new low record has been established. Deaths last year were only a quarter of the pre-war average, and the total number of cases less than half. The decline is in striking contrast to the increase in some other European countries where diphtheria epidemics have been the worst for fifty years.

The aim of the present summer campaign is to secure the immunisation of at least 550,000 babies before the winter epidemic season starts. It is believed that if the great majority of babies born each year were protected just before their first birthday, diphtheria would be eliminated in this country as an epidemic disease. Last year 474,809 children under five years of age were immunised, compared with 386,237 in 1944; but in England and Wales as a whole, four out of ten children are still unprotected.

Mass immunisation is now carried out in all big cities of Canada and the United States. Deaths from diphtheria per 100,000 children in Toronto fell from 15·7 a year in 1926–27 to 0·61 in 1933–36 and 0·3 in 1940–44. In New York, where diphtheria deaths averaged 1290 annually from 1910 to 1919, the 1939 figure was 22, the 1940 figure was 10, and the 1944 figure was 6.

A BUREAU OF SCIENTIFIC INFORMATION

THE Royal Society's Empire Scientific Conference warmly supported a proposal that a bureau for scientific information should be set up under the direction of the British Association. This will be at the disposal not only of scientists but also of the press, broadcasting, television, the films, and other publicising agents. It is intended that the bureau should keep records of all scientific research and answer questions or put inquirers into touch with scientists who can provide authoritative answers; it will also circulate official information about new developments. The bureau will serve to protect scientists from being inveigled into giving unconsidered accounts of their discoveries to reporters not qualified to handle them. The cost will be met partly from public funds.

CAR FOR THE DISABLED

THE "Larmar," a new single-seater car of unusual design, is now in production. Powered by a 2½ H.P. engine fitted at the rear, it cruises at 35 M.P.H., and has a petrol consumption of about 65 M.P.G. Priority of supply is to be given to the war-disabled, for whose needs the construction is adapted; the controls are placed in the usual positions, but the clutch, brake, and throttle can be arranged for either foot or hand. The net price is £198; the purchase-tax has not yet been decided, and the question of omitting this tax when the purchaser is disabled is still under consideration. The concessionaires are Larmar Cars, Odeon Parade, High Road, North Finchley, London, N.12.

University of Cambridge

The Rockefeller Foundation has made a grant of £11,000 for training and research in the psychological laboratory during the next five years.

University of Manchester

The following were successful at recent examinations:

M.D.—F. H. Bentley (with commendation), [William] Fielding, Frank Fletcher (gold medal), and Dennis Shute.

University of Dublin

On July 3, at Trinity College, the degree of Litt.D. (stip. cond.) was conferred on Mr. J. Johnston Abraham, F.R.C.S., senior surgeon to the London Lock Hospital, author of *The Surgeon's Log* and *Lettsom, His Life and Times*, and other works.

Queen's University, Belfast

On July 10, the honorary degree of D.SC. was conferred on Sir Alexander Fleming, F.R.S., and the honorary degree of M.D. on Dr. Frederick William Price. Dr. Price has established an annual lectureship at the university, and the first lecture, delivered on May 9 by Dr. Gordon Holmes, F.R.S., on the Evolution of Clinical Medicine as Illustrated by the History of Epilepsy, appeared in the *British Medical Journal* of July 6.

Royal College of Surgeons of England

The following lectures will be delivered at 5 P.M. during October and November. Oct. 21, Prof. Harry Platt: localised cystic lesions of bone. Oct. 22, Mr. Geoffrey Keynes: surgery of the anterior mediastinum. Oct. 23, Mr. A. C. Palmer: ætiology, symptoms, and treatment of procidentia. Oct. 24, Mr. W. B. Gabriel: causation and treatment of anal incontinence. Oct. 25, Mr. R. C. Brock: surgery of lung abscess. Oct. 28, Mr. R. J. McNeill Love: surgery of the gall-bladder and common bile-duct. Oct. 29, Mr. A. E. Porritt: value of penicillin in surgery. Oct. 31, Prof. Geoffrey Jefferson: surgery of intracranial aneurysms. Nov. 1, Prof. C. A. Pannett: pancreatic surgery. Nov. 4, Mr. Terence Millin: surgery of the prostate. Nov. 5, Mr. J. B. Hunter: surgical treatment of pulmonary tuberculosis. Nov. 6, Prof. R. St. Leger Brockman: intestinal obstruction.

Westminster Hospital Medical School

The inaugural address of the new academic session will be delivered by Lord Woolton on Oct. 7, at 3 P.M.

Royal Institute of Public Health and Hygiene

On July 22 Sir Alexander Fleming, F.R.S., was presented with the Harben gold medal, a three-yearly award for "eminent services rendered to the public health"; and Dr. J. J. Buchan received the Smith award, which is conferred every third year on the medical officer of health recognised "as having done the most noteworthy work in the discharge of his official duties."

Bureau of Hygiene and Tropical Diseases

The Secretary of State for the Colonies has confirmed the appointment of Dr. Charles Wilcocks as director of this bureau and has appointed Dr. H. J. O'D. Burke-Gaffney, O.B.E., assistant director. Dr. J. F. Corson, O.B.E., who, since July, 1943, had given his help as acting assistant director, retired last month. The bureau is housed in the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1.

Medical Society for the Study of Venereal Diseases

The society's annual general meeting will be held at 11, Chandos Street, London, W.1, on Saturday, July 27, at 2.30 P.M. Dr. G. L. M. McElligott will deliver his presidential address on management and treatment of the late and latent syphilitic.

Philadelphia Award

The Alvarenga prize has this year been awarded by the College of Physicians of Philadelphia to Mr. William H. Feldman, D.SC., of the Mayo Foundation, in recognition of his work on chemotherapy in tuberculosis.

Blood-donors

Last year there were over 400,000 blood-donors on panels in England and Wales, excluding the south-west region, which was administered by the Army. Ministry of Health figures show that blood-donations numbered 393,677, of which 230,149 were taken by mobile teams. Many thousands of bottles of whole blood and plasma went to the fighting Services, and about 4000 bottles of dried plasma were sent to Holland after its liberation, for the treatment of people suffering from the effects of starvation. Blood-transfusion is being used more widely than ever before in civilian hospitals, particularly for surgical and maternity cases. It is estimated that 350,000 blood-donations will be needed during the present year, and more donors are to be recruited by local appeals. According to the annual report of the Scottish National Blood Transfusion Association, donor attendances fell from 57,000 in the year ending March 31, 1945, to 35,000 in the following year, with a concurrent rise in the demand by general hospitals for whole blood from 10,000 to 14,000 bottles and for plasma from 5500 to 6000 bottles. The effect has been to reduce the reserve of plasma built up during the war and to restrict its current production. "Considerably more organised recruitment and propaganda will be necessary," the report concludes, "if the association is to meet its commitments to the hospital services."

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London County Council

Dr. Raymond H. Swindells, medical superintendent of New End Hospital since 1930, is retiring at the end of this month. The hospitals and medical services committee, recalling that he entered the service of the Fulham board of guardians in 1911, speak of the exceptional service rendered in the long career of this "most able and zealous officer." During the war of 1914–18 Dr. Swindells served in Gallipoli, Egypt, Palestine, and Syria.

A Reinstatement Case

The Folkestone Reinstatement Committee on July 12 awarded Dr. Albert Pearlman £400 compensation against the Folkestone corporation, by whom he was employed as a Civil Defence medical officer of health, at a salary of £400, from the outbreak of war until September, 1942, when he was called up. It was stated that on May 9 the War Office informed Major Pearlman that in view of the findings of a medical board he must relinquish his commission as from July 4. He was given 56 days' leave, and on May 27 applied for reinstatement in the position of part-time M.O.H. at a salary of £250. The Town Clerk, for the corporation, said that this was not an application for reinstatement but a reply to an advertisement in the public press for the office of part-time medical officer. The position was advertised, as required by the Ministry of Health, and had been filled with the approval of the Ministry. Dr. Pearlman's services had been satisfactory, and if there was a vacant position, when it was reasonable and practicable no doubt the corporation would consider Dr. Pearlman as an applicant. Mr. N. L. Taylor, for the appellant, said the position was one which the corporation had no power to make and the Ministry had no power to approve. The committee found that Dr. Pearlman's application satisfied the provisions of the Reinstatement Act; there had been default by the corporation in their discharge of their duties under the Act. It was not reasonable and practicable to order the employment of Dr. Pearlman in his former position, but they ordered the corporation to pay him £400 compensation for loss suffered or likely to be suffered through the corporation's default. Each party gave notice of appeal.

International Surgical Society

The next congress of this society will be held in London from Sept. 14 to 20, 1947. The president will be Dr. Leopold Mayer, of Brussels; the general secretary is Dr. L. Dejardin, also of Brussels. Local arrangements will be in the hands of a British committee, of which Prof. G. Grey Turner is chairman, and Mr. H. W. S. Wright, 9, Weymouth Street, Portland Place, W.1, is hon. secretary.

Provision of Nurseries

The London Women's Parliament and the National Society of Children's Nurseries are calling a joint conference on Sunday, July 28, at the Conway Hall, Red Lion Square, London, W.C.1. The speakers will include Dr. J. D. Kershaw, M.O.H. for Accrington. In the past fifteen months there has been a drop of 248 in the number of nurseries, and this conference is being called to discuss the need for a comprehensive nursery service as part of the recognised social services in the country.

Return to Practice

The Central Medical War Committee announces that the following have resumed civilian practice:

Mr. RICHARD BATTLE, M.B.E., F.R.C.S., Gorselands, Horsell Common, Woking, Surrey, and 148, Harley Street, W.1. (Tel.: Wel. 1207.)

Mr. GUY BLACKBURN, M.B.E., F.R.C.S., 51, Harley Street, W.1. (Tel.: Langham 3711.)

Dr. N. S. PLUMMER, F.R.C.P., 49, Harley Street, W.1.

Mr. F. J. RUTTER, F.R.C.S.E., 3, Barnfield Crescent, Exeter.

Mr. REGINALD S. STRANG, F.R.C.S., 3, Westbourne Road, Edgbaston, Birmingham, 13.

Dr. C. C. UNGLEY, F.R.C.P., 13, Portland Terrace, Newcastle-upon-Tyne, 2.

IN a leading article on Problem Families (June 22) we said that Pacifist Service Units are sponsored by the Society of Friends. We are informed that this is not so. Pacifist Service Units (whose address is 6, Endsleigh Street, London, W.C.1) is an independent organisation, drawing its members from all sections of the pacifist movement.—In a note on the new monthly journal, *Nutrition and Child Welfare*, on p. 58 of our issue of July 13, we mentioned with regret that *Maternity and Child Welfare* had come to an end in 1934. In fact it was incorporated, in October, 1934, with *Mother and Child*, the journal of the National Baby Welfare Council.

Appointments

CALVERT, MARY, M.B. Belf.: M.O., Nigeria (Colonial Service).
ELBERT, J. J., M.B.E., M.B. Glasg.: M.O., Nigeria (Colonial Service).
GALBRAITH, A. J., M.D. Edin.: deputy medical superintendent, Brighton Mental Hospital, Haywards Heath.
SMITH, A. G., M.D. Glasg., F.R.C.S.: dermatological specialist medical referee for county-court districts of Beccles, Lowestoft, Norwich, Bury St. Edmunds, Ipswich, and other towns in the Eastern Counties.

Middlesex Hospital, London, W.1:
DINNICK, O. P., M.B. Lond., D.A.: anæsthetist.
MURRAY, C. J. B., M.S. Lond., F.R.C.S.: asst. surgeon.
NEWMAN, P. H., D.S.O., M.C., F.R.C.S.: asst. orthopædic surgeon.
WILLCOX, ARTHUR, M.D. Camb., M.R.C.P.: asst. physician.

St. George's Hospital, London, S.W.1:
CRAWFORD, THEODORE, M.D. Glasg., F.R.F.P.S.: director of pathology.
DOW, J. F., M.B. Camb., M.R.C.P.: asst. physician.
HUNTER, M. I. A., M.D. Camb., M.R.C.P.: asst. physician.
SIDDONS, A. M. H., M.CHIR. Camb., F.R.C.S.: asst. surgeon.
SMITH, RODNEY, M.S. Lond., F.R.C.S.: asst. surgeon.
WILLIAMS, DENIS, M.D. Manc., F.R.C.P.: asst. neurologist.

Royal South Hants and Southampton Hospital:
EAGAR, F. J., L.R.C.P.I.: dermatologist.
LANGSTON, H. H., M.B. Lond., F.R.C.S.: orthopædic surgeon.
MELLER, H. K., M.B.E., M.B. Lond., M.R.C.P.: asst. physician.
RICHARDSON, L. A., M.B. Camb., F.R.C.S.: asst. surgeon.
ROBERTSON, K. M., M.D. Lond., M.R.C.P.: physician.
TODD, P. G., M.D. Lond., M.R.C.P.: asst. physician.
WHITE, H. O., M.R.C.S.: asst. anæsthetist.
ZORAB, E. C., M.B. Lond., D.O.M.S.: ophthalmic surgeon.

Cardiff Royal Infirmary:
EVANS, DILLWYN, M.B. Wales, F.R.C.S.E.: surgeon in charge of fracture and orthopædic dept.
EVANS, R. BRYON, M.D. Lond., M.R.C.P.: asst. physician (general medicine).
HODGSON, G. S., M.B.E., D.M. Oxfd: dermatologist.
MOGG, R. A., M.B. Wales, F.R.C.S.: asst. surgeon (urology).
SPILLANE, J. D., M.D. Wales, M.R.C.P.: asst. physician (neurology).
THOMAS, H. A., M.B. Wales, F.R.C.S.E.: asst. surgeon, E.N.T. dept.

Examining Surgeons under the Factories Act, 1937:
BARBER, C. H., D.S.O., D.M. Oxfd: Thame, Oxford.
BRAYBROOKE, M. K., M.R.C.S.: Tetbury, Gloucester.
BROWN, ALEXANDER, M.B. Glasg.: Linton, Cambridge.
DALLEY, GILBERT, M.R.C.S.: Poole, Dorset.
DOCKRAY, J. V., O.B.E., M.R.C.S.: Hoxne, Suffolk.
FURNESS, H. S., M.D. Lond.: Melton Mowbray, Leicester.
GUINAN, J. T., L.R.C.P.I.: Rayleigh, Essex.
JONES, J. D., M.R.C.S.: Llansawel, Carmarthen.
MATHIAS, D. R. B., M.B. Camb., F.R.C.S.: Welshpool, Montgomery.
POTTS T. N. V., M.D. Durh.: Spilsby, Lincoln.
REES, W. G., B.M. Oxfd, M.R.C.P.: Nailsworth, Gloucester.
ROSS, J., M.B.: Fraserburgh, Aberdeen.
STEPHEN, G. A., M.B. St. And.: Lochgelly, Fife.
TEMPLE, F. F., M.B. Edin.: Alford, Lincoln.
YUILL, MARY E., M.B. Camb.: Marple, Cheshire.

Medical Diary

JULY 28—AUG. 3

Thursday, Aug. 1

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
5 P.M. Mr. A. L. d'Abreu: War Surgery of the Chest. (Hunterian lecture.)

Births, Marriages, and Deaths

BIRTHS

ARDEN.—On July 16, at Bournemouth, the wife of Surgeon Lieut.-Commander L. D. Arden, R.N.—a son.
COCHRANE.—On July 18, in London, Dr. Sheila Cochrane, the wife of Mr. H. L. Cochrane, F.R.C.S.—a son.
HART.—On July 19, at Cork, the wife of Dr. F. Dudley Hart—a daughter.
JORY.—On July 16, the wife of Mr. Norman Jory, F.R.C.S.—a son.
MOWBRAY.—On July 19, at Newcastle-on-Tyne, the wife of Dr. Robert Mowbray—a son.
SAMES.—On July 10, at Northwood, the wife of Major C. Patrick Sames, R.A.M.C.—a daughter.
SANFORD.—On July 14, the wife of Mr. D. Astley Sanford, F.R.C.S. of Sunderland—a son.
TAYLOR.—On July 14, at Aberdeen, the wife of Dr. A. R. Taylor—a daughter.

MARRIAGES

HART—SAWDAY.—On July 20, in London, Robert John Collins Hart, M.R.C.S., to Mary Winifred Sawday.
HEATHFIELD—WOODCOCK.—On April 29, at Secunderabad, India, Kenneth William Gordon Heathfield, M.D., captain R.A.M.C., to Dorothy Phyllis Woodcock, Q.A.I.M.N.S./R.
MACKENZIE—MOMBER.—On July 16, at High Barnet, Dr. Evan Pratt Mackenzie to Beatrice Margaret Momber.
MINCHIN—PASSMORE.—On June 4, in India, R. L. Haviland Minchin, lieut.-colonel I.M.S., to Marian Frances Passmore, P.M., R.A.F.N.S.

DEATHS

CRAIG.—On July 10, at Welwyn, John William Craig, L.R.C.P.E.
CRICHTON.—On July 20, at Redhill, Crawford Smith Crichton, M.D. Edin., aged 64.
DUNLOP.—On July 15, at Bracknell, Binnie Dunlop, M.B. Glasg.
LANYON-OWEN.—On July 16, in London, Lanyon Edward Lanyon-Owen, M.R.C.S., lieut.-colonel late R.A.M.C.
LE FLEMING.—On July 16, at Wimborne, Sir Kaye Le Fleming, M.B. Camb., hon. M.D. Dubl. and Melb.
ROBERTS.—On July 19, at Prenton, Robert Edward Roberts, M.D. Lpool, F.F.R., F.R.C.P.
SMITH.—On July 19, at Folkestone, George Francis Smith, M.R.C.S.
WALLER.—On July 16, William Walls Waller, B.M. Oxfd, of Church Crookham, Hants, aged 58.

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DES MOINES, IOWA

VISUAL DEFECTS IN PRISONERS-OF-WAR FROM THE FAR EAST

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TOWARDS the end of 1945 most of the Royal Air Force personnel liberated from Japanese prisoner-of-war camps were repatriated and were medically examined at a unit in this country, where numerous visual defects among them called for investigation, the results of which are detailed here. More than 2500 men were seen, and a questionnaire about details of dietary deficiencies, available alcohol and smoking materials, and general and ocular diseases was returned by some 1470 of them. These answers, together with the first-hand reports of their medical officers and our own observations, have provided the data for this report.

Most of these men had been imprisoned first in Java and transferred thence in working parties to other places —many to the Amboina group of the Molucca islands, and some to Japan, Singapore, and Malaya—and the visual defects had appeared at different times under the varied conditions of the camps, but chiefly in two main groups: either during the first year in Java (26%), or after 6–9 months in Amboina (62%).

In Java the general standard of health was relatively good; limited outbreaks of malaria and dysentery arose, and sore throats and tropical ulcers of the legs were fairly common. The diet, though barely adequate and badly balanced, could be supplemented through the black market with limited amounts of fruit, vegetables, meat, and eggs; lack of protein was its most notable defect. After some months, complaints of sore lips and tongue began to arise, and the men were found to have injection and desquamation at the mucocutaneous junctions of the mouth, with similar injected areas on the tongue. In one camp, after a dysentery epidemic which involved about half of the total complement of 4000, these symptoms became more severe and were accompanied by "burning feet" (and sometimes hands), sore red watering eyes, and in some cases blurring of vision.

Patients with visual symptoms were examined by Captain D. Schwarr, ophthalmologist, Royal Dutch Indian Army Medical Service, who described the condition thus:

> "It commenced in general with symptoms of chronic conjunctivitis and the appearance of scotomata, central for colour, and central, paracentral, and peripheral negative defects between which vision got worse and worse, so that a total negative central scotoma arose with vision of 2/300 with 30° eccentricity in some cases. In a number of cases the fundus showed no abnormality in the early stages. In some the optic disk became abnormally pinkish-red, and this was followed by slight papillœdema, with distension of the retinal veins and marked macular œdema. In rare cases retinal hæmorrhages were seen. Later the disk recovered its colour, and typical temporal atrophy appeared."

On transfer to Amboina, where, after several months, 62% of the cases here considered arose, much worse conditions were encountered: the diet was more strictly limited, and occasional additions were possible only by individual bartering—e.g., for eggs and fish. Working-conditions were more severe, and hard manual labour was exacted, from all who could walk, in working parties whose task was to level an airstrip from the coral. These parties included often the ambulant sick. Hospital facilities were of the crudest, and drugs limited to magnesium sulphate, some vitamin preparations of doubtful quality, and an abundance of camphor, calcium, and caffeine injections. Disease in these circumstances soon became rife; a dysentery outbreak, beginning on the ships en route from Java, reached epidemic proportions within a month and left a legacy of chronic diarrhœa, later complicated by beriberi, pellagra, and severe œdema. Within two months deaths in one camp totalled 200, and there were 1000 sick out of a total complement of 2071. Repeated representations to the Japanese in charge led, several months later, to some improvement in conditions and diet, the relative nature of which will be seen from the analysis of the rations during the improved period (table I).

Visual defects, resembling those arising in Java, began to give rise to serious concern within a few months of arrival, and to them were added complaints of night-blindness and "coral-blindness," a condition characterised by photophobia and ocular pain with lacrimation and intense blepharospasm. This condition, which developed among men working long hours in intense sunlight on the white coral, responded within a day or so to rest in the shade, leaving usually no defect of vision, and was considered to be an inflammation due to ultraviolet light, comparable with snow-blindness.

VISUAL DEFECTS

Among the cases examined, defects of vision, recovered or still present, were a feature of the history of a large proportion and were classified into three broad groups:

Group I: those with defective reading vision only, usually transient.

Group II: those with transient blurring of both reading and distance vision.

Group III: those with a persistent defect of both reading and distance vision.

Few had persistent night-blindness.

Groups I and II presented mainly problems of refraction, most of them falling into group I, and these appeared to have had a temporary asthenopia associated with their very debilitated condition before liberation. The visual acuity was within normal limits, and no abnormality of media, fundi, or ocular movements was seen. Some, men approaching presbyopic age, were in need of lenses for reading. Among the few patients whose distance vision also had blurred were some with errors of refraction—chiefly hypermetropic astigmatism and hypermetropia—sufficient to explain their symptoms, and these showed no sign of ocular disease. In the rest paracentral scotomata remained as evidence of past optic neuritis, and these are included with the cases of partial optic atrophy considered below.

Group III numbered about 250, and included a few men with active ocular disease: syphilitic and non-specific uveitis and syphilitic disseminated choroiditis, and one or two with nystagmus and extraocular muscle palsies. The remainder comprised:

(1) a number with fully correctable refractive errors—chiefly myopic and mixed astigmatism—in whose visual fields no scotomata appeared; and

(2) a larger group in whom correction with lenses produced little or no improvement in vision, and whose visual fields showed absolute or relative scotomata to white test objects. These cases, with those of recovered optic neuritis referred to above, form a group of 163 cases of partial optic atrophy.

PARTIAL OPTIC ATROPHY

The history in 89% of these 163 cases was of gradual deterioration of vision within the first or second year of captivity, occurring either as a general blurring of vision or as scotomata. In them the defects had increased over a period of weeks or months until the reading of even large print became impossible and facial features were recognisable only with difficulty at a distance ranging from a yard to a few yards. At this stage some of the most severely affected had been provided, through their medical officers, with "blind" badges denoting their condition to their captors. A more rapid onset was not uncommon, and in 11% the visual loss had developed within twenty-four hours.

The onset of the defect had in many cases been insidious

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and unrelated to other disease, so far as could be recollected. The relationships, where ascertainable, are detailed in table II. The blurring of vision, which is now the presenting symptom, is in many cases described as a black spot which decapitates a man when he is viewed directly, or which obliterates words when reading.

Visual Acuity.—After refraction a few (6%) had visual acuity of less than 6/60 in either eye, and a similar proportion 6/6 in both; in 55% the visual acuity lay between 6/60, 6/60 and 6/24, 6/24; in the remaining 33% vision, though subnormal, was better than this.

Fundus.—Pallor of the central halves of the disks was present in most cases and commonly appeared as a pallid sector between the inferior and superior temporal retinal vessels; attenuation of the vessels was noted only in one or two of the most severe cases with generalised pallor of the disk. Signs of retinal disturbance were not common and when present were noted between the macula and the disk as small areas of pigmentary disturbance. In 8 cases these changes were seen under red-free light to affect the macular area.

Perimetry showed no significant constriction of the peripheral fields in any but the more severely affected cases, among which one or two with large scotomata involving both fixation and blind spots showed a constriction of 20°–30° to 2 and 5/330 white.

Examination of central fields revealed various types of defects, all of which lay in the centrocæcal area, the most common finding was bilateral absolute central scotomata to 2, 5, 10, or 15/2000 white (figs. 1 and 4), and in such cases the associated loss of visual acuity was correspondingly great. In others, less severely affected, scotomata less dense and less centrally placed appeared, and these often took the form of central and paracentral relative scotomata with eccentric absolute nuclei (figs. 2 and 5), which in some cases formed a partial ring and left the fixation area clear (fig. 3). In others there were minute scotomata about the central area where the 2-mm. white object appeared to "flash on and off."

TABLE I—ANALYSIS OF RATIONS, HAROEKOE, NOVEMBER, 1943, TO JUNE, 1944 *

Food item	Amount g./man/day	Carbohydrate (g.)	Fat (g.)	Protein (g.)	Vitamin A I.U.	Vitamin B_1 I.U.	Vitamin B_2 I.U.	Vitamin C (mg.)	Calories
Polished rice	594·0	464·0	1·8	41·7	..	59·0	..	..	2039
Fresh meat	4·1	..	0·2	0·8	2·4	1·2	5·8	..	5
Salt meat	18·3	..	1·1	3·6	..	7·2	..	..	24
Vegetable oil	18·0	..	15·2	..	..	..	..	..	137
Sugar	22·2	21·8	..	..	..	..	..	..	87
Salt	20·4	..	..	..	..	..	..	..	..
Tapioca flour	8·8	7·7	..	..	..	..	..	..	31
Smoked fish	15·2	..	..	2·3	..	..	..	..	9
Kedele beans	46·6	..	1·5	11·6	36·4	23·2	..	..	60
Katella	149·7	44·9	0·6	1·5	..	14·9	..	..	191
Green papaya	182·6	0·3	..	0·6	..	..	..	..	3
Cucumber	97·2	1·7	0·2	2·1	..	..	..	..	17
"Green vegetables"	58·0	2·4	0·5	4·3	1165·0	21·4	..	11·6	30
Lombok	3·9	..	..	..	..	..	..	4·9	..
Onions	4·5	0·2	..	..	..	..	..	..	1
Unripe bananas	78·0	6·6	0·1	..	25·0	12·5	..	..	27
Coconuts	3·0	0·4	0·7	0·1	..	..	..	..	8
Total	1324·5	550·0	21·9	68·6	1228·8	139·4	5·8	16·5	2669

* Obtained from Dutch medical sources in Amboina.

TABLE II—ONSET OF VISUAL DEFECT IN RELATION TO OTHER DISEASE AMONG 163 CASES OF OPTIC ATROPHY

Disease	Cases	Visual defect: Time of onset	Visual defect: Type of onset
Beriberi	23	During active stage	Gradual
	5	Ditto	Sudden (one to a few days)
	16	After recovery	Gradual
Pellagra	1	During active stage	Gradual
	1	Ditto	Within a day
	2	After recovery	Gradual (one had beriberi at the time)
	2	Ditto	Sudden (one within an hour, one in a day)
Sore lips, tongue, and scrotum	9	During active lesions	Gradual
	1	Ditto	Within a day
"Burning feet"	3	During complaint	Gradual
	7	After recovery	Gradual
	1	Ditto	Within a day
Dysentery	8	During active stage	Gradual
	6	Soon after recovery	Gradual
	5	Ditto	Overnight or within a day
Dysentery and beriberi	6	During active stage	Gradual
	7	Soon after recovery	Gradual
Coral-blindness	1	After the attack	Present on subsidence of acute symptoms
	1	Ditto	Gradual
P.U.O.	1	Immediately after illness	Gradual
Malaria	2	Ditto	Gradual
Anæmia	1	Ditto	Gradual
Typhoid fever	1	Ditto	Gradual
No history of other lesion preceding visual defect	50	..	Gradual
	3	..	Within a few days

"Gradual" in all cases implies slow progression over a period of months. Of these cases 62% first noticed visual deterioration while in Amboina, 26% in Java, and the remainder in Japan (8), Singapore (3), Hong-Kong (3), Siam (5), or on board ship (1).

Slit-lamp examination of cases reviewed the nasal, temporal, and inferior corneal quadrants in a group of 53 cases with the following results:

48% showed a few vessels in the limbic area and none penetrating clear cornea; 42% had also a few penetrating vascular twigs; 10% showed also an occasional single arcade within the limbus.

"Ghost vessels" of more than a single arcade in depth were not encountered.

The findings in 20 cases are given in table III. No correlation has been found between the history and the clinical picture which would justify the belief, at first entertained by us, that a group of cases of more abrupt onset and greater recovery could be separated from the whole. The signs of an established papillo-macular-bundle lesion of various degrees of severity were found in both types of case.

The negative slit-lamp findings are, we believe, to be expected now that there has been time for some months of normal diet to take effect, and they appear to confirm Ridley's (1945) prognosis of improvement in the cases with active injection seen by him soon after liberation.

General Neurological Findings (Squadron-Leader G. S. Graveson).—Most of these patients were ambulant, and the blood Wassermann or Kahn reactions negative in all. Many gave a history of nerve lesions, past or present.

Of the 163 cases of partial optic atrophy 90 have so far been seen, of which number 37 have neurological lesions in addition to optic atrophy, and these probably represent all of those in the group having serious organic disorders outside the optic nerves. Many have had a neuropathy and recovered; indeed, of these 90 only 21 give no history suggesting neuropathy.

Though the food factors whose lack has produced

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this nutritional neuropathy remain unknown or at the most are speculative, the clinical features are precise and clear. Certain parts of the central nervous system are principally affected: optic nerves, peripheral nerves, posterior columns of the spinal cord, and, less commonly, other cranial nerves—trigeminal (sensory), auditory, and vagus (recurrent laryngeal branch)—and pyramidal tracts. Various combinations of such lesions may be present in individual cases. Of the above-mentioned 37 cases 12 had evidence of peripheral neuritis, 5 of posterior-column damage, and 20 of combined nerve and posterior-column damage. Among this total were 6 cases of nerve-deafness and 4 of pyramidal-tract involvement.

From the point of view of disability, posterior-column degeneration has usually been the most serious lesion. The severest cases show a profound ataxic paraplegia, with loss of sense of position as high as the hip-joint and wrist, and loss of vibration sense as high as the lumbar or thoracic spine, tendon reflexes being lost. Few have survived to present such gross damage; but lesser degrees of similar damage are more common—here reflexes are preserved. Residual signs of peripheral neuritis have been less severe: numbness of fingers, feet, and legs and occasionally excessive sweating, but rarely paræsthesia. Objectively there is diminution or loss of pain and touch sensation of glove-and-stocking distribution, and sometimes hyperæsthesia of the skin and tenderness of the muscles of the extremities. Pronounced muscle weakness or atrophy has been uncommon in the group, the intrinsic foot muscles being chiefly affected, and after them the long flexors and extensors of the toes. Reflexes are lost or diminished in these cases.

In none has spasticity been seen, the only sign of pyramidal-tract involvement being the isolated presence of extensor plantar responses.

In all cases the effects of cord and nerve damage have been more pronounced in the legs than in the arms. Eighth-nerve damage has been unilateral or bilateral, never complete, and sometimes accompanied by tinnitus.

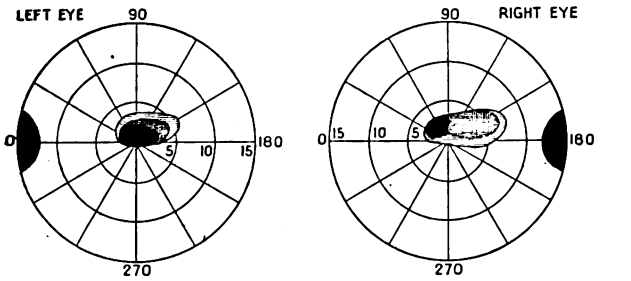

Fig. 5—Aged 39: visual acuity rt 6/24, lt 6/36, reads J.8. Blurred vision 2 months after sore lips and tongue. Absolute scotomata to 10 mm. (black), 5 mm. (cross-hatched), and 2 mm. (single-hatched) white at 2000 mm.

In prison-camp all these disorders were labelled "beriberi" by the men, though it is doubtful whether thiamine deficiency played any part in their production. It seems clear, however, from their histories that nearly all of them had at one time a definite peripheral neuritis—i.e., a symmetrical paralysis of the limbs, with foot-drop and wrist-drop, partial or complete, and a sensory loss of glove-and-stocking distribution. Posterior-column degeneration was rendered obvious in some cases by the recovery of the peripheral nerve symptoms.

One final point is noteworthy: as in the case of the optic atrophy, the precipitation or exacerbation of the neuropathy was closely related to preceding infections, particularly malaria and dysentery. In the one case an increased metabolism, and in the other the additional effect of decreased absorption from the diseased intestinal mucosa, produced a greater lack of those factors which normally prevent the development of this syndrome.

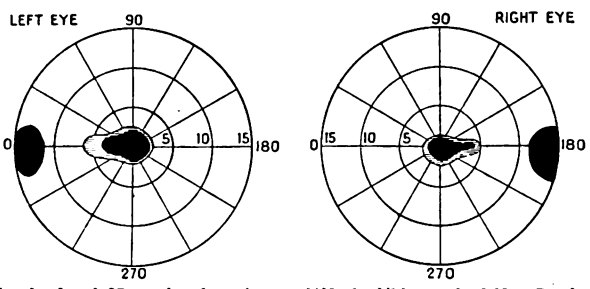

Fig. 1—Aged 25: visual acuity rt 6/60, lt 6/36, reads J.10. Gradual onset after sore lips, tongue, and scrotum. Absolute scotomata to 2 mm. (hatched) and 10 mm. (black) white at 2000 mm.

These cases have differed from those described among German prisoners-of-war in the Middle East by Spillane and Scott (1945) only in the greater incidence of polyneuritis among them.

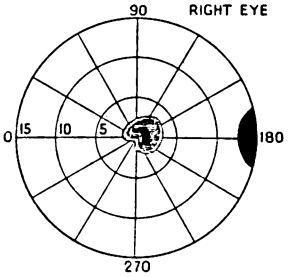

Fig. 2—Aged 25: corrected visual acuity 6/24 scotomatously. Insidious onset. Absolute scotomata to 4 mm. (black) and 2 mm. (cross-hatched) white with surrounding relative area to 2/2000 white (single-hatched).

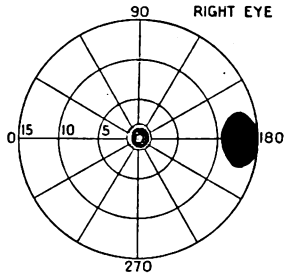

Fig. 3—Aged 22: visual acuity 6/9 scotomatously, reads J.2. Insidious onset. Absolute (cross-hatched) and relative (single-hatched) scotomata to 2/1200 mm. white at 2000 mm.

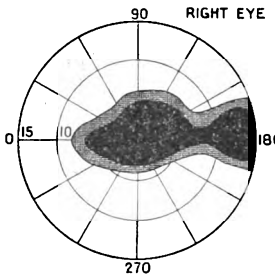

Fig. 4—Aged 46: corrected visual acuity finger-counting at 1 metre. Onset with dry beriberi following sore lips, tongue, and scrotum. Absolute bilateral scotomata to 20 mm. (black) and 10 mm. (cross-hatched) white at 2000 mm.

TREATMENT

In the Active Stage.—Facilities for treatment in the active stage differed considerably from camp to camp. For the cases which developed during the first year in Java drugs were available and limited dietary additions possible. In his clinical trials at this time Captain Schwarr obtained "very good results" from the addition of three eggs a day to the prison diet, with or without artificial pyrexia, and he speaks well of meat, liver, and fish given similarly. He had "no successes" with yeast, and "fully negative results" with vitamin B_1, 5000 I.U. per day by injection for two weeks; lactoflavine 20 mg. per day for two weeks; nicotinamide 100 mg. per day for two weeks; vitamin C 160 mg. per day for two weeks; and beans 100 g. extra per day. Increasing the rice ration appeared to have definitely harmful effects. Captain Schwarr refers also to preventive experiments carried out when numerous new cases were arising. In these additions of liver, eggs, meat, beans, and fruit respectively were made to the rations of separate camps, and only in those where extra animal protein was provided did no fresh cases arise. None was found in one camp where an extra supply of canned meat was still available.

When visual defects began to appear in Amboina, little treatment was possible and personal dietary additions could be made only occasionally by bartering. A few of the patients seen could obtain extra food in this way (as eggs in all but one man, who bought fresh fish), and it is perhaps significant that the remaining defect in these cases is a moderate one, with fair visual acuity and scotomata which are paracentral and relative.

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TABLE III—OCULAR FINDINGS IN 20 CASES OF PARTIAL OPTIC ATROPHY

Case	Related general disease	Previous vision	Present vision Distance (Snellen) Reading (Jaeger)	Fundus	Scotomata
1	None	6/6, 6/6	R. 6/60 −0·50 D.S. = 6/36 L. 6/60 −0·50 D.S. = 6/36 Reads J.6	Pallid temporal sectors of both disks	Bilateral absolute central
2	None	6/6, 6/6	R. 4/60, L. 6/60 Reads J.8 (+1·5 D.S.)	Bilateral temporal disk pallor	Bilateral absolute central
3	None	6/5, 6/5	R. and L. 6/36 −0·50 D.S. = 6/36 Reads J.8	Ditto	Bilateral absolute central
4	None	—	R. 4/60 L. 6/60 −0·5/ −1·0 = 6/36 Reads J.10	Hemipallor of right disk, left shows pallid temporal sector	Bilateral absolute central
5	None	"Normal"	R. 6/60 −0·75 D.S. = 6/24 L. 6/60 −1·25/0·5 = 6/24 Reads J.8	Bilateral temporal disk pallor with pigmentary disturbance at maculæ	Absolute scotomata, right paracentral, left central
6	None	"Normal"	R. 6/36 −/ −1·0 = 6/24 L. 6/36 −0·5/ −1·0 = 6/24 Reads J.4 (+1·50 D.S.)	Slight bilateral temporal pallor	Bilateral pericentral
7	With sore lips, tongue, and scrotum at the onset or within the preceding three months	6/5, 6/5	R. 6/18 −0·50 D.S. = 6/12 L. 6/24 −0·75 D.S. = 6/18 Reads J.4	Bilateral temporal pallor of disks	Bilateral central relative with absolute paracentral nuclei
8	With sore lips, tongue, and scrotum at the onset or within the preceding three months	6/5, 6/5	R. 6/60, L. 5/60 Reads J.6 (+2·0 D.S.)	Ditto	Bilateral relative centrocæcal with absolute central nuclei
9	With sore lips, tongue, and scrotum at the onset or within the preceding three months	6/12, 6/18 (uncorrected)	R. 6/60 +4·5 D.S. = 6/18 L. 3/60 +5·0 D.S. = 6/24 Reads J.4	Ditto	Bilateral absolute central
10	With sore lips, tongue, and scrotum at the onset or within the preceding three months	6/6, 6/6	R. 6/24 L. 6/60 −/ −0·75 = 6/36 Reads J.6	Bilateral pallid temporal sectors of disks	Bilateral absolute central
11	With sore lips, tongue, and scrotum at the onset or within the preceding three months	6/6, 6/6	R. 6/60 −0·5/ −1·0 = 6/24 L. 3/60 −0·5/ −1·0 = 6/60 Reads J.8	Ditto	Bilateral absolute central
12	Pellagra shortly before ocular disturbance	6/6, 6/6	R. 6/60, L. 2/60 Reads J.12 (+2·0 D.S.)	Marked bilateral temporal pallor	Bilateral absolute central
13	Onset during or shortly after "beriberi"	"Normal"	R. 6/36 −0·5/ −1·0 = 6/18 L. 6/36 −0·5/ −1·0 = 6/24 Reads J.4	Within normal limits	Bilateral central relative with paracentral nuclei
14	Onset during or shortly after "beriberi"	6/6, 6/9	R. 6/36 −1·0/ −0·5 = 6/18 L. 6/36 −0·5/ −1·0 = 6/24 Reads J.6	Ditto	Bilateral absolute central
15	Onset during or shortly after "beriberi"	6/6, 6/6	R. 3/60 −0·5/ −0·5 = 6/60 L. 3/60 −0·5/ −0·5 = 4/60 Reads J.10	Bilateral pallid temporal sectors of disks	Bilateral absolute central
16	Onset during or shortly after "beriberi"	6/36, 6/36	R. 3/60 −4·5/ −1·0 = 6/60 L. 3/60 −0·5 D.S. = 3/60 Reads J.10	Marked temporal pallor with streak of atrophy at left macula	Bilateral absolute central
17	Onset during or shortly after "beriberi"	6/6, 6/6	R. 6/24 −0·75 D.S. = 6/18 L. 3/60 Reads J.6	Left hemi-, right sector disk pallor; pigmentary disturbance at maculæ	Bilateral absolute central
18	Onset during or shortly after "beriberi"	6/6, 6/6	R. and L. 6/60 Reads J.10 (+1·5 D.S.)	Bilateral pallid temporal sectors of disks	Bilateral absolute central
19	Onset during or shortly after "beriberi"	—	R. and L. C.F. at 1 metre Reads J.12 (+2·0 D.S.)	Well-marked bilateral temporal pallor	Bilateral absolute centrocæcal
20	Onset during or shortly after "beriberi"	6/5, 6/5	R. and L. 6/60 Reads J.10 (+2·0 D.S.)	Right hemi-, left sector disk pallor	Bilateral relative central with absolute paracentral nuclei

The issue to all personnel of a ration of yeast infusion made from cultures of airborne yeasts grown by Flight-Lieutenant L. J. Audus, D.SC., was begun in December, 1943. The vitamin content of this could not be determined, but from the time of its administration the incidence of pellagra diminished considerably, though there was little improvement in the eye cases.

Treatment was again more freely available when men were returned in sick drafts to Java some months later, but this, also, appears to have had little effect.

Of the Established Lesion.—High-protein diets, with extra eggs and milk, and vitamin tablets containing aneurine (3 mg.), riboflavine (3 mg.), nicotinamide (30 mg.), ascorbic acid (75 mg.), vitamin A (4500 I.U.), and vitamin D (450 I.U.) were given, and a group of 53 men were re-examined after an interval of some weeks. As would be expected from the clinical findings and the duration of the lesion, the response to treatment in these men was poor, and such improvement as has been noted (ability to read a further line of Snellen types without substantial reduction in the size of the scotoma) may well be purely subjective and explained by the patient's increased ability to make use of his scotomatous vision.

DISCUSSION

Scotomatous vision, developing in association with sensory disturbances of the limbs, injection of the conjunctiva, desquamation of the lips, and later defects of locomotion and hearing, appears to have been first noted by Strachan (1888) in his account of cases of multiple peripheral neuritis in Jamaica. The condition which he describes (1897) resembles, in its clinical features, both in the active stage and in the residual lesions, our cases, with the difference that the ulnar and herpetic lesions which he found were not seen by us. His cases responded

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to treatment, which was chiefly dietetic, and in default of any other then known cause he considered them to be due to malaria.

Cases having a more definite association with excoriating lesions of the lips, tongue, and scrotum have since been described from Nyasaland (Stannus 1911), Jamaica (Scott 1918), Sierra Leone (Wright 1927), Nigeria (Moore 1934, 1937), Malaya (Landor and Pallister 1935), and elsewhere, and their nutritional origin has been emphasised by the later writers. The close association with pellagrous lesions was commented on by Stannus (1911) and has since been repeatedly emphasised by observers who record the response of the acute lesions to improved diet—with the addition of 'Marmite' and cod-liver oil (Wright 1927, Moore 1934, 1937); liver, yeast, or marmite (Landor and Pallister 1935); and nicotinic acid (Wilkinson and King 1944). All have noted the resistant nature of the visual and aural defects unless treatment is begun early.

The prophylactic value of animal protein was mentioned by Moore (1937), who considered the condition to be preventable by the inclusion in the diet of adequate proteins of high biological value, and by Wilkinson and King (1944), whose cases differ from others in having shown no scotomata. The latter writers contend that lack, or a relative deprivation, of first-class protein is a precipitating factor in the onset of the disease. Goldsmith (1946) has lately supported this view.

The 163 cases here described are closely similar to the late stages of those described by Spillane and Scott (1945) in German prisoners-of-war (with the neurological differences already noted); and, in their ocular defects, they resemble those reported by Ridley (1945) among British prisoners seen shortly after liberation from Japanese camps. The association with mucocutaneous lesions referred to by the earlier observers is less constant in our cases, though it is probably stronger than table 11 suggests, since a large proportion of personnel had such lesions at one time or another—thus of 53 men specifically questioned on the point, 16 gave a history of sore lips, tongue, and/or scrotum either at the onset of the visual symptoms or within the preceding three months.

No evidence was found to incriminate either alcohol (to which few had had access in any form) or tobacco. Few of the men were of the age-group in which tobacco amblyopia is common; some were non-smokers, and the proportion who could obtain tobacco, as cigars, cigarettes, good pipe tobacco, or shag, was similar among the affected and unaffected. The geographical distribution of the cases and their varied times of appearance seem to be against an exogenous toxic origin.

The occurrence of the condition among poorly nourished men in whom deficiency diseases due to lack of the vitamin-B complex were widespread is clearly in favour of a nutritional cause. The fact that at least 62% of the cases appeared after a dysentery epidemic in which the great majority of prisoners were involved is probably significant in view of the effect which such disease would have on intestinal biosynthesis and absorption of vitamins. Such biosynthesis has been clearly demonstrated in man by Najjar and Holt (1943) in respect of aneurine, and by Ellinger et al. (1944) in the case of nicotinic acid.

The disappointing results of treatment in the early stage with yeast and with the individual components of the vitamin-B complex, and the superiority of animal protein over yeast in prevention and treatment, suggest that some factor besides vitamin B, contained in animal protein, is necessary to prevent the onset of these lesions. The incidence of the majority of the cases in two groups, one in Java when protein deficiency first began to be felt, and the second in Amboina when this lack was further accentuated, appears to support the contention of Wilkinson and King (1944) that this lack is a precipitating factor in the disease, and it may well be that the rôle of protein consists in promoting the biosynthesis of vitamins in the intestine.

With regard to the refractive errors, the recognised tendency for hypermetropia to increase in tropical conditions as ciliary muscle-tone decreases with that of the general musculature led us to expect a preponderance of such errors; but, in fact, myopic errors far exceed them in the men who required glasses. We are unable to explain this, but it is interesting that the appearance of myopic and mixed astigmatism was noted as a transient phenomenon in Royal Air Force personnel in Iraq by Livingston (1932). The duration of the defects in our cases makes it unlikely that recovery will be so complete.

We wish to thank the Director-General, Medical Branch, Royal Air Force, for permission to publish this paper; Air Commodore P. C. Livingston, C.B.E., A.F.C., F.R.C.S., for providing the facilities for the ocular part of the investigation; Squadron-Leaders H. M. Finzel, B. H. O'Dowd, and W. G. Bridges for help in the preliminary ophthalmic examinations; Squadron-Leader G. S. Graveson for his report on the neurological findings; Section Officers M. E. Sharland, V. J. Goodman, J. Norman, R. Gibb, and R. F. M. Rowe for their invaluable aid in carrying out the field examinations; and Captain D. Schwarr for permission to use his findings in Java.

REFERENCES

Ellinger, P., Coulson, R. A., Benesch, R. (1944) *Nature, Lond.* **154**, 270.
Goldsmith, H. (1946) *Brit. med. J.* i, 407.
Landor, J. V., Pallister, R. A. (1935) *Trans. R. Soc. trop. Med. Hyg.* **29**, 121.
Livingston, P. C. (1932) *Brit. J. Ophthal.* **16**, 577.
Moore, D. G. F. (1934) *Ann. trop. Med. Parasit.* **28**, 295.
— (1937) *Lancet*, i, 1225.
Najjar, V. A., Holt, L. E. jun. (1943) *J. Amer. med. Ass.* **123**, 683.
Ridley, H. (1945) *Brit. J. Ophthal.* **29**, 613.
Scott, H. H. (1918) *Ann. trop. Med. Parasit.* **12**, 109.
Spillane, J. D., Scott, G. I. (1945) *Lancet*, ii, 261.
Stannus, H. S. (1911) *Trans. R. Soc. trop. Med. Hyg.* 1911/12, p. 112.
Strachan, H. (1888) *Sajons' J.* **1**.
— (1897) *Practitioner*, vol. lix, p. 477.
Wilkinson, P. B., King, A. (1944) *Lancet*, i, 528.
Wright, E. J. (1927) *Med. sanit. Rep. Sierra Leone*, p. 29.

INTRATHECAL STREPTOMYCIN IN MENINGITIS

CLINICAL TRIAL IN TUBERCULOUS, COLIFORM, AND OTHER INFECTIONS

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THIS is the report of a trial of streptomycin given intrathecally in meningitis due to organisms which have been shown to be sensitive to streptomycin in vitro and in laboratory animals. The trial is not complete, but the results to date are on the whole so unfavourable as to indicate that the quick success obtained with penicillin in the treatment of pneumococcal and other susceptible forms of meningitis will not be repeated with streptomycin. The results indicate also that intrathecal injections of streptomycin may be risky, and may require certain special safeguards. At a time when urgent appeals are being made in this and other countries for supplies of streptomycin for treatment of individual cases of meningitis we think that our preliminary results should be made known even though they are not conclusive.

Streptomycin, kindly supplied by Merck & Co. Inc., lots 200 and 213, was given intrathecally in solutions of 10,000–20,000 units per c.cm. of normal saline. Seven cases of meningitis were treated, and preliminary tests were also made in two cases of inoperable malignant brain tumour. The bacteriology, range of dosage, route of injection, incidence

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of unfavourable reactions, and results are shown in table I. Owing to limited supplies no case was treated systemically.

UNFAVOURABLE REACTIONS

The incidence of unfavourable reactions following the first injection of streptomycin was high. In cases 5, 6, 8, and 9 the patients became deeply comatose, with disturbance of pulse, temperature, and respiration. The reaction in case 9, a boy aged 8 years, was particularly alarming, as it followed lumbar injection of only 2500 units. In cases 5 and 8 the patients died some hours later of respiratory failure. Though both these patients were severely ill at the time of the injection, neither appeared moribund, and in particular the patient with tuberculous meningitis (case 8) was responding fairly well and seemed likely to live for several days. In case 7 the reaction was mild: the patient, an infant aged 9 months, showed a slight rise of temperature and pulse-rate, with an increase in the tension of the anterior fontanelle, beginning five hours after lumbar injections of 15,000 and 20,000 units. Yet another patient (case 4) died of sudden respiratory failure eight hours after his fourth intraventricular injection; but as he was extremely ill, possibly he died from the meningitis rather than from the effects of the streptomycin.

Reactions thus followed both lumbar and ventricular injections. There is some evidence that they developed more rapidly after the ventricular injections, since, though in case 9 the patient had a rigor during the lumbar injection, he did not become comatose until two hours later. Large doses were given into the lateral ventricles in cases 3 and 4 without mishap, but in these it was established post mortem that there was a blockage of the cerebrospinal pathways preventing the streptomycin from reaching the brain stem, where this type of reaction is probably set up. Further, in case 3, a cerebellar decompression had been performed and the streptomycin was given through an indwelling catheter. Both these measures would tend to prevent a dangerous rise in intracranial pressure, which may well have been a factor in the other cases.

Reaction of the Meninges.—In both patients with tumour (cases 1 and 2) there was a moderate increase in the number of cells in the lumbar cerebrospinal fluid (C.S.F.) within twenty-four hours of the injection (table II). No such reaction was detected in the cases of meningitis.

SPREAD AND RETENTION OF STREPTOMYCIN IN C.S.F.

Streptomycin evidently does not spread so quickly as penicillin, for in case 6 (achromobacterium meningitis) half an hour after intraventricular injection of streptomycin 100,000 units and penicillin 10,000 units the lumbar C.S.F. contained 400 units of penicillin per c.cm. and no streptomycin. In two pyocyaneus meningitis cases attempts to study spread demonstrated a complete block between spinal subarachnoid space and ventricle, subsequently confirmed by necropsy; however, streptomycin was shown to spread freely and quickly from one lateral ventricle to the other.

After injections of 15,000–20,000 units in an infant (case 7) no streptomycin was present twenty-four hours later. After injection of 30,000 units into the lateral ventricle in case 4 ventricular concentration of streptomycin had dropped to 2·5 units per c.cm. in twenty hours, but after injection of 80,000 units it was 30 units thirteen and a half hours and 12·5 units thirty-two hours later. With combined lumbar and ventricular injection totalling 120,000 units the lumbar concentration twelve hours later was 50 units per c.cm. (case 6).

EFFECT ON BACTERIA AND CLINICAL PROGRESS

In case 6 (achromobacterium infection) the C.S.F. became and remained sterile twenty-four hours after the first injection of streptomycin, whereas in case 7 (*H. influenzæ*) the intensity of the infection was decreased, in that colonies grown on culture of the C.S.F. were sparser and only appeared in forty-eight hours instead of twenty-four hours. No effect was detected in the cases of *Ps. pyocyaneus* meningitis (cases 3 and 4).

CASE 3 (*pyocyaneus meningitis after cerebellar decompression in a case of lateral sinus thrombosis, cerebral and cerebellar abscess*).—Treatment was begun on the tenth day of meningitis

TABLE I—RESULTS OF TREATMENT WITH STREPTOMYCIN

Case no.	Bacteriology	Route of administration	Largest single dose (units)	Total dosage (units)	Reaction to injection	Interval between injection and reaction	Meningeal reaction	No. of organisms in C.S.F.	Clinical progress	Ancillary treatment	Result
				TUMOUR CASES (PRELIMINARY TESTS)							
1	(Glioma)	L	50,000	50,000	None detected	..	Moderate pleocytosis	..	Unaffected	..	Died
2	(Melanomatosis)	V and L	100,000	240,000	None detected	..	Moderate pleocytosis	..	Unaffected	..	Died
				MENINGITIS CASES							
3	*Ps. pyocyanea*	V*	80,000	620,000	None detected	..	None detected	Unaffected	Unaffected	Sulphonamides; penicillin	Died
4	*Ps. pyocyanea*	V	100,000	210,000	None detected	..	None detected	Unaffected	Unaffected	Sulphonamides; penicillin	Died
5	*Ps. pyocyanea*	L	100,000	100,000	Fatal	7½ hr.	None detected	Unaffected	Rapid deterioration	Sulphonamides	Died
6	*Achromobacterium*	V and L	80,000	160,000	Very severe†	Immediate	None detected	Disappeared	Improved	Sulphonamides; penicillin	Recovered
7	*H. influenzæ*	L	20,000	50,000	Mild	5 hr.	None detected	Decreased	Improved	Specific antiserum ‡; sulphonamides; penicillin	Died
8	*Myco. tuberculosis*	L	100,000	100,000	Fatal	9 hr.	None detected	Unaffected	Rapid deterioration	None	Died
9	*Myco. tuberculosis*	L	2500	2500	Very severe	Immediate	None detected	Unaffected	Unaffected	..	Died

V = ventricular; L = lumbar. * Ventricle drained with indwelling catheter. † Reaction after ventricular injection.
‡ Serum given in initial, and penicillin in terminal, stages.

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TABLE II—REACTION OF MENINGES TO STREPTOMYCIN

Case no.	Pathology	Dose (units)	Route of administration	Stage	Cells per c.mm.			Protein*
					Polymorphs	Monocytes	Red cells	
1	Glioma	50,000	Lumbar	Before streptomycin	0	4	1800	60
				After streptomycin	230	20	13,000	70
2	Melanomatosis	100,000	Ventricular	Before streptomycin	6	72	..	350
				After streptomycin	820	60	..	350

* mg. per 100 c.cm.

(but patient may have had a previous episode of ventriculitis before he came under our observation). He was given streptomycin into the left lateral ventricle for thirteen days through an indwelling catheter, and the concentration of streptomycin in the ventricular fluid never fell below 20 units per c.cm. in tested samples. The organism was normally sensitive to streptomycin in vitro and remained so when last tested on the tenth day of treatment.

Streptomycin injected into the ventricle could not be recovered from the lumbar C.S.F., and vice versa. Streptomycin was injected by the lumbar route but without regularity, so that the lumbar C.S.F. did not always contain streptomycin. The total dosage of streptomycin (intraventricular and lumbar) throughout the thirteen-day course was 600,000 units.

Throughout treatment *Ps. pyocyanea* was grown from every sample of ventricular or lumbar C.S.F. The patient died fourteen days after treatment began.

Necropsy showed active ventriculitis: the ventricular system was filled with thick greenish-yellow pus, and the ependymal lining was replaced by a grey translucent fibrous layer 0·3 cm. wide. Basal meninges were thickened but showed little macroscopic pus, and there was extensive subarachnoid hæmorrhage in the spinal canal.

CASE 4 (*pyocyaneus meningitis after gunshot wound of neck involving posterior arch of atlas and dura, followed by local wound infection, necrosis of exposed atlas, and cerebrospinal leak*).—Treatment with streptomycin was begun ten days after *Ps. pyocyanea* had been first grown from the C.S.F., by which time there was already a block, with greatly increased amount of protein in lumbar and ventricular C.S.F., and the patient was confused, incontinent, swallowing with difficulty, and his peripheral circulation was poor.

In vitro the organism did not grow in the presence of streptomycin 10 units per c.cm., but after several passages it grew in the presence of 400 units per c.cm.

Treatment was given by daily intraventricular injections for four days (total 210,000 units) and one lumbar injection of 100,000 units on the first day. Twenty-four hours after the first injection the number of organisms diminished considerably, and on the fourth day of treatment the ventricular C.S.F. was sterile. However, ten hours after the fourth injection the patient had sudden respiratory failure and died.

Necropsy showed thick yellow pus in the spinal canal and in the basal cisterns. The foramina of Magendie and Luschka were occluded by fibrous tissue. The 3rd and 4th ventricles were filled with thick gelatinous pus, the aqueduct of Sylvius and the right foramen of Monro were blocked by thick pus, and the lateral ventricles, which were dilated, also contained pus. The ventricular walls consisted of a thick shaggy membrane.

There was thus no clear correlation between the in-vitro sensitivity of the organism and the clinical effect of the drug, and in fact organisms of normal sensitivity were found in C.S.F. containing many times the theoretical bactericidal concentration of streptomycin. This may be because pus and other necrotic products have a more acid reaction than C.S.F. and thus reduce the bactericidal action of streptomycin (Abraham and Duthie 1946). This finding is similar to that of Reimann et al. (1945), who in a case of typhoid fever grew organisms from the blood in spite of a blood-streptomycin level considerably higher than that required to kill the organism in vitro.

No effect on the bacteria could be observed in our two cases of tuberculous meningitis, since in case 8 the patient died eight hours after treatment was begun, and in case 9 the reaction to the small lumbar injection of streptomycin was so alarming that no further injections were given. Cooke et al. (1946) report a case of tuberculous meningitis with survival after protracted intramuscular and intrathecal treatment with streptomycin. Though the case is encouraging, organisms did not disappear from the C.S.F until a month after treatment was begun.

The clinical progress in our cases closely paralleled the effect of streptomycin on the organism. In case 6 the patient recovered, some improvement was seen in case 7, and in the other cases no beneficial effects could be detected.

RESULTS

All three cases of pyocyaneus meningitis, the case of influenzal meningitis, and the two cases of tuberculous meningitis were fatal. The patient with achromobacterium meningitis was the only one to recover.

DISCUSSION AND SUMMARY

These cases indicate that treatment of advanced pyocyaneus meningitis with intrathecal streptomycin is not likely to be effective. This is not surprising, since necropsies have shown the presence of one or more blocks in the cerebrospinal pathways, and the ventricular lining converted into a thick shaggy purulent membrane. In this type of case also there is much pus in the ventricle and cisterns, and large doses of streptomycin, as in case 3, may be ineffective in sterilising the C.S.F.

In meningitis of recent onset the results of streptomycin are less discouraging. In the achromobacterium infection there was prompt subsidence of infection after use of streptomycin. In the infant with *H. influenzæ* infection streptomycin treatment was followed by decrease in the number of the organisms and by clinical improvement. Cerebral vascular thrombosis then developed, and the infection recurred.

Doses of the order of 80,000–100,000 units, once or twice daily, are probably necessary, and in acutely ill patients such injections are not free from danger, either as an immediate effect from local irritation of the hind brain, or as a delayed effect from secondary rise of intracranial pressure. Injections should be given slowly (5000–10,000 units a minute), and a safety valve should be provided in the form of an indwelling ventricular catheter draining at a pressure of 200 mm. H_2O. It is possible that at least some of the untoward reactions in these cases were due to impurities and that the risks will diminish as purer preparations become available.

REFERENCES

Abraham, E. P., Duthie, E. S. (1946) *Lancet*, i, 455.
Cooke, R. E., Dunphy, D. L., Blake, F. G. (1946) *Yale J. Biol. Med.* 18, 221.
Reimann, H. A., Elias, W. F., Price, A. H. (1945) *J. Amer. med. Ass.* 128, 175.

". . . Those whose duty it is to operate schemes for the betterment of the national health know that ignorance and apathy are two of the most stubborn enemies of progress. The only known method of combating their evil influence is by developing a national health consciousness through health education. . . . No really substantial and lasting improvement in the health of the country can be achieved without the active coöperation of the people and such coöperation does not come instinctively. . . . Health teaching is as worthy of serious thought as any other form of teaching and it requires all the aids that educationists and publicists can bring to its service. At the same time, it must always be supplementary to the educational work of existing health services."—Sir ANDREW DAVIDSON, chief medical officer, Department of Health for Scotland, speaking at Edinburgh on July 13.

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FOLIC ACID
IN THE TREATMENT OF PERNICIOUS ANÆMIA
REPORT OF FIVE CASES

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FOLIC acid, a component of the vitamin-B complex, was originally obtained by fractionation from liver; its presence was estimated by its ability to promote the growth of *Lactobacillus casei*, and it thus became known as the *L. casei* factor. In August, 1945, Angier and others announced the synthesis of a compound identical with the *L. casei* factor from liver, and recently (Angier et al. 1946) they have published details of its preparation and constitutional formula, showing it to be a compound of 2-amino-4-hydroxy-6-methyl pteridine and *p*-aminobenzoylglutamic acid. This synthetic folic acid was tested by Spies et al. (1945) in the treatment of nutritional macrocytic anæmia such as occurs in the southern States of the U.S.A.; the material was given by mouth, and an excellent response, with a sharp reticulocyte peak followed by a sustained rise in hæmoglobin and red cells, was obtained in every way comparable to the response to liver.

These results have been extended. Spies (1946a) has reported satisfactory responses to folic acid in sprue, macrocytic anæmia of pregnancy, and true Addisonian pernicious anæmia; Moore et al. (1945) reported a similar group. Darby et al. (1946) gave a convincing report of 3 cases of sprue; they showed that the folic-acid treatment initiated a change from megaloblastic to normoblastic marrow, and that folic acid would produce a response in a case in which other members of the vitamin-B complex had been given without result. Zuelzer and Ogden (1946) reported that, in a deficiency anæmia of infants with megaloblastic marrow, folic acid brought about a remission of the anæmia and a return of the marrow to a normoblastic picture.

Of all these reports those on pernicious anæmia are the least satisfactory, so it was important to try folic acid in the treatment of unequivocal cases. The patients in the small series recorded here all had the typical uncomplicated clinical picture of relapsing pernicious anæmia—megalocytic anæmia, megaloblastic marrow, and achlorhydria, but no signs of neurological involvement. They were either untreated or had had no effective treatment for some months; there was a preliminary control period of at least two weeks during which no treatment was given, the reticulocyte count remained low, and red cells and hæmoglobin did not show any rise. For criteria of satisfactory response we required (1) transformation of megaloblastic to normoblastic marrow; (2) a good reticulocyte response; (3) a sustained rise of red cells and hæmoglobin; and (4) clinical remission of symptoms.

MATERIAL AND DOSAGE

The folic acid was supplied in 5 mg. tablets and in powder form. It is a bright orange-yellow crystalline substance. For oral administration the tablets were used in daily doses of 20 mg. at first and then 10 mg. after about the fourteenth day of treatment. For parenteral use the folic acid was dissolved in water with the aid of disodium phosphate, and the solution autoclaved at 10 lb. for 15 min. or passed through a Seitz filter.

CASE-RECORDS

CASE 1.—A married woman, aged 63, had about twelve months' history of fatigue, loss of weight, and dyspnœa and palpitation on exertion. Apart from occasional nausea there were no digestive symptoms. Nothing relevant in past medical history or family history. She was very pale and slightly icteric. Tongue not smooth. Heart enlarged, apex just beyond midclavicular line in fifth space, hæmic murmurs present, blood-pressure 175/90 mm. Hg. Lungs clear. No enlargement of liver or spleen. Abdomen obese; no abnormal mass palpable. Reflexes present; no signs of disease of central nervous system.

Blood-count: red cells 1,640,000 per c.mm., Hb 38% (Haldane), colour-index 1·15, white cells 6300 per c.mm. (polymorphs 62%, lymphocytes 23·5%, monocytes 5%, eosinophils 9%, basophils 0, myelocytes 0·5%), nucleated red cells 5 per 200 white cells, reticulocytes 3·2%. *Sternal puncture* showed a cellular very active marrow, with numerous typical megaloblasts of all stages, typically large metamyelocytes, and hardly any normoblasts. Fractional gastric analysis showed achlorhydria.

Folic acid was given in the dose of 20 mg. daily by mouth (10 mg. b.d.); on the seventh day the reticulocytes rose to 25·2%, and on the eighth day a sternal puncture showed a predominantly normoblastic marrow, active and cellular. Improvement thereafter was steady (see table). After eighteen days the dose of folic acid was reduced to 10 mg. daily, and on the twenty-fourth day her red cells were 3,210,000 per c.mm. and Hb 74%. Her clinical condition was good, the hæmic murmurs had disappeared, and she was discharged to the outpatient clinic shortly afterwards. The achlorhydria was still present.

CASE 2.—A married woman, aged 50, had been known to have pernicious anæmia for ten years and had responded to treatment on several occasions. She was remiss in keeping up her treatment and on this occasion was admitted to hospital in a weak state with the following blood-count: red cells 950,000 per c.mm., Hb 24%, colour-index 1·26, white cells 4400 per c.mm. Sternal puncture showed a very active typically megaloblastic marrow.

She was given 20 mg. of folic acid daily by mouth. On the eighth day reticulocytes were 30·8%, and on the ninth 32·6%. Sternal puncture on the ninth day showed a predominantly normoblastic marrow of considerable activity. On the eleventh day the red-cell count was 1,560,000 per c.mm. and Hb 36%. Progress was thereafter steady (see table and fig. 1). After eighteen days the dose of folic acid was reduced to 10 mg. daily. The blood-count continued to rise, and on the thirty-first day red cells were 3,570,000 per c.mm. and Hb 78%. Clinically she had greatly improved and was fit for discharge to the outpatient clinic. The achlorhydria persisted unchanged.

CASE 3.—A male garment-maker, aged 47, had been under treatment for twelve months for throat trouble and had noted increasing dyspnœa and palpitation on exertion, falling off of appetite, and flatulence. A week before attending hospital he had collapsed at work. His mother had died of

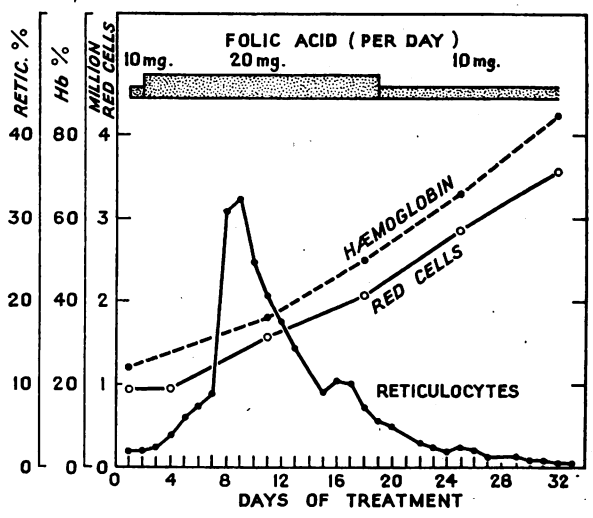

Fig. 1—Response of case 2 to folic acid (control period omitted).

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pernicious anæmia. His previous medical history was not relevant.

He was pale and icteric. Tongue normal. Tonsils large and pitted. Pulse-rate 120 per min., regular. Heart not enlarged; basal systolic murmur. Blood-pressure 200/120 mm. Hg. Lungs clear. No enlargement of liver or spleen; no abnormal mass in abdomen. Reflexes brisk; no sensory changes; fundi pale. Urine contained a trace of albumin. Blood-count: red cells 2,120,000 per c.mm., Hb 52%, colour-index 1·24, white cells 6200 per c.mm. (polymorphs 61%, lymphocytes 38%, monocytes 1%), reticulocytes 2·2%. Fractional gastric analysis showed achlorhydria.

He was admitted to hospital about three weeks later, when his red-cell count was 1,470,000 per c.mm. and the Hb had fallen to 36%. Sternal puncture showed a fairly cellular typically megaloblastic marrow. He was given 20 mg. of folic acid daily by mouth. On the fourth day reticulocytes rose to 6·6%, and on the eighth day reached 34·6%. On the tenth day sternal-marrow puncture showed an active predominantly normoblastic marrow, with very few megaloblasts. On this day the dose of folic acid was reduced to 10 mg. daily.

He continued to make steady progress; on the twenty-third day his red-cell count had reached 3,770,000 per c.mm. and Hb 88%. He had clinically recovered and was discharged to the outpatient clinic for continuation of treatment. The achlorhydria was still present.

CASE 4.—A married woman, aged 52, first attended the outpatient clinic in January, 1946, complaining of increasing headache, dizziness, dyspnœa and palpitation on exertion, and flatulent indigestion. At that time she was very pale.

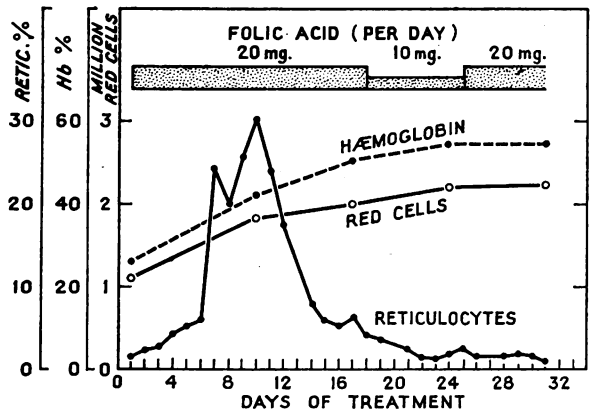

Fig. 2—Response of case 4 to folic acid (control period omitted).

Tongue normal. Apart from some moist sounds at the left lung base, no notable signs were found in the other systems. She had achlorhydria. Blood-count showed a severe microcytic anæmia, and the sternal marrow was normoblastic.

She was treated with iron and improved, but only partially; in January the red cells were 3,100,000 per c.mm. and Hb 38%. In April the red cells were 2,710,000 per c.mm. and Hb 50%. Later it became clear that she had developed pernicious anæmia, and she was admitted to hospital for investigation.

She now had well-marked pallor and icterus. Tongue rather smooth. Finger-nails showed some koilonychia. Heart slightly enlarged to the left; blood-pressure 135/65 mm. Hg. Moist sounds at base of left lung. Spleen and liver not palpable; no abnormal mass in abdomen. Reflexes brisk except in right leg; no objective sensory changes; plantar responses flexor. Blood-count: red cells 1,170,000 per c.mm., Hb 26%, colour-index 1·13, white cells 7200 per c.mm., reticulocytes 2·4%. Sternal marrow: megaloblastic picture, but less cellular than usual; very few normoblasts. Radiography of lungs showed only basal congestion.

She was given 20 mg. of folic acid by mouth daily. On the seventh day of treatment the reticulocytes rose to 26%, and reached a peak of 30·6% on the tenth day. Sternal puncture, repeated on the eighth day, showed a predominantly normoblastic marrow, still not very cellular. On the seventeenth day her red-cell count was 1,980,000 per c.mm. and Hb 50%. The dose of folic acid was reduced to 10 mg. daily, as with the previous patients; but her recovery-rate was only slow and not comparable to the preceding cases

RESPONSE TO FOLIC ACID IN 5 PATIENTS WITH PERNICIOUS ANÆMIA

Case	Erythrocytes (millions/c.mm.)					Hæmoglobin % (Haldane)					Reticulocytes %			Treatment	
											Initial	At peak	Day of peak	Folic acid by mouth (mg./day)	Days given
1	**1**	**10**	**17**	**24**	**31**	**1**	**10**	**17**	**24**	**31**	2·2	25·2	7	20	17
	1·40	1·92	2·48	3·21	3·46	34	46	60	74	78				10*	14*
2	**1**	**11**	**18**	**25**	**32**	**1**	**11**	**18**	**25**	**32**	1·8	32·6	9	10	1
	0·95	1·56	2·09	2·84	3·57	24	36	50	66	78				20	17
														10*	13*
3	**1**	**9**	**16**	**23**	**35**	**1**	**9**	**16**	**23**	**35**	3·2	34·6	8	20	9
	1·47	2·11	2·75	3·77	4·41	36	52	66	88	98				10*	14*
4	**1**	**10**	**17**	**24**	**31**	**1**	**10**	**17**	**24**	**31**	1·8	30·6	10	20	17
	1·10	1·82	1·98	2·21	2·28	26	42	50	54	54				10	7
														20*	7*
5	**1**	**6**	**13**	**20**	**27**	**1**	**6**	**13**	**20**	**27**	0·8	45·6	7	75 i.v.	1st
	0·95	1·18	1·79	2·30	2·58	22	28	40	48	56				75 i.v.	2nd
														15 i.m.	18th†

* Maintenance dose of folic acid being continued.
† Continued on alternate days.
Bold figures represent day of blood examination.

(see fig. 2). After another week, therefore, the dose of folic acid was increased to 20 mg. daily, and on the thirty-first day the red-cell count was 2,280,000 per c.mm. and Hb 54%. Clinically she had recovered well, but the achlorhydria was unaffected.

CASE 5.—A joiner, aged 58, said he had been diagnosed as pernicious anæmia eighteen years before. He had taken small quantities of desiccated stomach at more or less regular intervals, but for the last few months he had noted increasing pallor, fatigue, and dyspnœa, and was losing weight. He was extremely pale, with a dry skin and generalised œdema. Tongue normal. Pulse-rate 100 per min. Heart not enlarged; blood-pressure 130/90 mm. Hg. Lungs clear. Liver enlarged to about 3 in. below costal margin, smooth, and not tender; spleen not palpable; no other abnormality in abdomen. Reflexes normal; no objective sensory change. Blood-count: red cells 1,210,000 per c.mm., Hb 28%, colour-index 1·16, white cells 2900 per c.mm. (polymorphs 49%, lymphocytes 45%, monocytes 5%, eosinophils 1%), reticulocytes 1%, Sternal marrow showed a typical megaloblastic hyperplasia. Fractional gastric analysis showed achlorhydria.

In this case 150 mg. of folic acid was given intravenously in a drip. The folic acid was dissolved with the aid of disodium phosphate and 75 mg. was given on each of two days. On the second day a blood-count showed red cells 950,000 per c.mm. and Hb 22%; reticulocytes 1·4%. On the fourth day reticulocytes had risen to 12·2%, and they reached a peak of 45·6% on the seventh day. On the eighth day sternal puncture showed a cellular normoblastic marrow with hardly any megaloblasts. As the table shows, progress has been steady, and treatment is being continued with 15 mg. i.m. on alternate days.

DISCUSSION

These results show clearly that synthetic folic acid will bring about remissions in patients with true Addisonian pernicious anæmia, and the responses seem in every way comparable to those obtained with the best pre-war liver extracts. The dosage used—20 mg. by mouth daily at first, reducing to 10 mg. when the remission is well advanced—appears, by results, to be minimal, and some patients may need more. In case 5 parenteral administration was highly successful in relieving his very desperate condition.

Folic acid is not the liver principle that has been obtained in a very concentrated form by other means. For instance, folic acid has an intense orange-yellow colour, whereas the purest liver principle preparations are colourless. Nevertheless, the indications from these results are that folic acid can safely be substituted for liver extracts at least in the early stages of treatment of true pernicious anæmia. The maintenance dose has yet to be worked out; this will take time, and at present there are not sufficient supplies for this purpose.

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How far treatment with synthetic folic acid may be successful in other forms of macrocytic anæmia remains to be defined. Spies (1946b) has already noted a case that responded to liver extract after failing to respond to folic acid, and it is likely that others will be found; but it is clear, from the reports already published, that folic acid can produce remission in most cases.

In all of our cases gastric achlorhydria persisted throughout the present periods of observation.

SUMMARY

Synthetic folic acid has been given to 5 patients with true pernicious anæmia in relapse.

The folic acid produced clinical remissions, with return of the marrows to normoblastic from megaloblastic states, and a restoration of blood-counts towards normal levels. The achlorhydria gastrica persisted.

Folic acid was supplied through the courtesy of Lederle Laboratories Inc. to Boots Pure Drug Co. Ltd., who placed it at our disposal for this investigation.

REFERENCES

Angier, R. B., et al. (1945) *Science*, **102**, 227.
— — (1946) *Ibid*, **103**, 667.
Darby, W. J., Jones, E., Johnson, H. C. (1946) *J. Amer. med. Ass.* **130**, 780.
Moore, C. V., Bierbaum, O. S., Welch, A. D., Wright, L. D. (1945) *J. Lab. clin. Med.* **30**, 1056.
Spies, T. D. (1946a) *Lancet*, i, 225.
— (1946b) *J. Amer. med. Ass.* **130**, 474.
— Vilter, C. F., Koch, M. B., Caldwell, M. H. (1945) *Sth. med. J., Alabama*, **38**, 707.
Zuelzer, W. W., Ogden, F. N. (1946) *Amer. J. Dis. Child.* **71**, 211.

BENADRYL IN HAY-FEVER

A NOTE ON ITS ACTION

DAVID HARLEY

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From the Laboratories of the Inoculation Department, St. Mary's Hospital, London

'BENADRYL' (β-dimethylaminoethyl benzhydryl ether hydrochloride) is a new antihistamine compound synthesised by Rieveschl and Huber in the research laboratories of Parke, Davis and Co.

Studies on animals have shown that it has a powerful antihistamine and antispasmodic effect, as evidenced by the degree of protection it gives against histamine bronchospasm and anaphylactic shock (Loew et al. 1945, Wells et al. 1945). Clinical trials have shown that it is highly effective in the treatment of urticaria and angioneurotic œdema (Curtis and Owens 1945, O'Leary and Farber 1945, Todd 1946), in hay-fever (McElin and Horton 1945a and b, Koelsche et al. 1945), and, to a lesser degree, in asthma and various other allergic conditions. Its administration was shown to reduce the skin reactivity to histamine (McGavack et al. 1946). Its action is thought to be brought about by adsorption, at the site of action of histamine, by which it blocks the effect of the latter (Wells et al. 1945). Low toxicity, absence of the side-effects of parasympatholytic drugs, and relative freedom from untoward reactions, characterise this action (McGavack et al. 1946).

The present paper reports the effect of benadryl on the histamine and grass-pollen skin reactions of hay-fever patients.

METHODS

A group of five hay-fever patients (grass-pollen-sensitive) was investigated. They were all typical cases and had received no treatment previously. Each patient was given three doses of 100 mg. (two 50-mg. capsules) of benadryl by mouth during the first day of treatment, followed by three doses of 50 mg. a day for six days. No other treatment was given. Skin-tests were carried out with histamine (1% of the acid phosphate), grass-pollen extract (20,000 units per c.cm.), and control carbol-saline, (1) before treatment was started, (2) at the end of the first day of treatment, and (3) on completion of the treatment. The prick method of testing was used, and all tests were made on the flexor surface of the forearms. Details of the technique of the prick-test, recording the reactions, and their measurement by planimeter, have been described previously (Harley 1933, 1937).

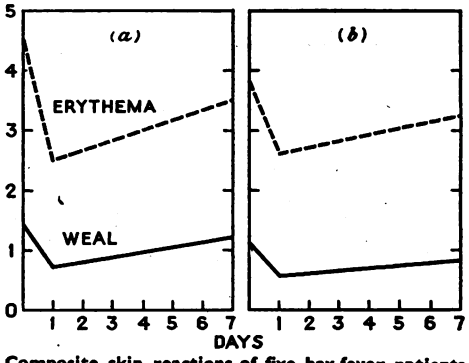
RESULTS

Skin Reactions.—The results of the skin-tests are set out in composite form in the figure. They demonstrate an approximate fourfold reduction of the area of the skin reaction to grass-pollen extract and to histamine as the result of the first day's treatment (benadryl 300 mg.). This reduction was definite in each case, and the erythema was considerably less intense. After six days' treatment with benadryl 150 mg. a day the skin reactions had returned to about three-quarters of their original size.

Clinical Effects.—Of the five patients treated, three were promptly and completely relieved of their hay-fever and remained so until 12–24 hours after the treatment was stopped, when the symptoms recurred. One patient was greatly improved (estimated 75% relief), and one patient was not apparently benefited. Side-effects developing during the first day of treatment consisted of dryness of the mouth, slight drowsiness, and "muzziness" in the head. These symptoms abated when the dose of benadryl was reduced to 150 mg. a day.

DISCUSSION

The histamine theory of the mechanism of the allergic diseases is based on the pioneer work of Dale and Laidlaw (1910) and Lewis (1926) and has received considerable support during recent years (Farmer 1941, Feldberg 1941). Briefly stated, it suggests that the allergic reaction is the expression of cellular damage produced by the special method of specific idiotoxin-idioceptor union on or in the cells, and, in common with other forms of cellular damage, is attended by the liberation of histamine (or a histamine-like substance, "H-substance") from the cells participating in the reaction, and that it is this H-substance that produces the changes in the capillaries, smooth muscle, &c., which constitute the allergic reaction. Dale (1929) believes that the reaction is due to the liberation of preformed histamine, present in the tissue cells, the union of idiotoxin with idioceptor on or in the cells acting like other injurious stimuli.



Composite skin reactions of five hay-fever patients before, during, and after benadryl treatment showing average diameters of weal and erythema after prick-tests with (a) pollen and (b) histamine. Control-tests with carbol-saline gave negative results throughout.

The tests detailed above demonstrate that benadryl reduces equally the histamine skin sensitivity and the specific pollen skin sensitivity, and thus support the histamine theory of allergy.

With regard to the clinical value of the drug in the treatment of hay-fever, the few cases herein reported (owing to the very limited supply of benadryl available) are insufficient for an accurate assessment, but it seems likely that benadryl will abolish the need for pre-seasonal specific desensitisation in many patients. (It is estimated that the degree of reduction of the pollen skin sensitivity produced by the first day's treatment with 300 mg. of benadryl was equivalent to that produced by a course

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of specific desensitisation with pollen extract to a dose of 20,000–30,000 units.) Possibly a combination of benadryl with co-seasonal specific treatment may become the method of choice, but that remains for further investigation to decide. As a palliative in urticaria too, the results in the few cases in which I have given it have been dramatically successful, and it seems not unlikely from the recent American reports that benadryl will be hailed as the greatest advance in the palliative treatment of the allergic diseases since the discovery of the action of adrenaline.

I wish to thank Dr. J. Stanley White, of Parke, Davis and Co., for the supply of benadryl.

REFERENCES

Curtis, A. C., Owens, B. B. (1945) *Univ. Hosp. Bull., Ann Arbor*, **2**, 25.
Dale, H. H. (1929) *Lancet*, i, 1179, 1233, and 1285.
— Laidlaw, P. P. (1910) *J. Physiol.* **41**, 318.
Farmer, L. (1941) *J. Lab. clin. Med.* **26**, 702.
Feldberg, W. (1941) *Annu. Rev. Physiol.* **3**, 671.
Harley, D. (1933) *Lancet*, ii, 1469.
— (1937) *J. Path. Bact.* **44**, 589.
Koelsche, G. A., Prickman, L. E., Carryer, H. M. (1945) *Proc. Mayo Clin.* **20**, 432.
Lewis, T. (1926) *Brit. med. J.* ii, 61.
Loew, E. R., Kaiser, M. E., Moore, V. (1945) *J. Pharmacol.* **83**, 120.
McElin, T. W., Horton, B. T. (1945a) *Proc. Mayo Clin.* **20**, 417.
— — (1945b) *Proc. cent. Soc. clin. Res.* **18**, 45.
McGavack, T. H., Elias, H., Boyd, L. J. (1946) *J. Lab. clin. Med.* **31**, 560.
O'Leary, P. A., Farber, E. M. (1945) *Proc. Mayo Clin.* **20**, 429.
Todd, L. C. (1946) *Sth. Med. Surg.* **108**, 1.
Wells, J. A., Morris, H. C., Bull, H. B., Dragstedt, C. A. (1945) *J. Pharmacol.* **85**, 122.

Preliminary Communication

FAT-DIGESTION IN SPRUE
STUDIED BY INTESTINAL INTUBATION

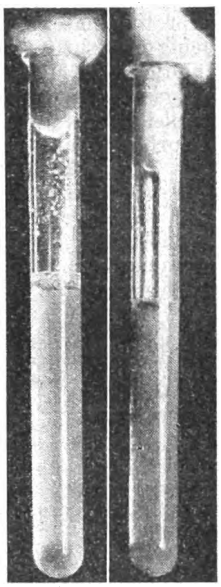
THE results of some preliminary investigations carried out to elucidate the mechanism of fat-digestion in subjects with tropical sprue are presented now, because few new cases are being encountered in the Royal Air Force, and other workers may be in a more favourable position to pursue the lines of investigation described.

Investigations have been carried out on ten patients invalided to this country with tropical sprue contracted in India, Burma, or Ceylon. Eight patients who had not served in tropical countries, had no present or past history of gastro-intestinal disorder, and were convalescent from orthopædic operations, acted as controls.

On the morning of the examination patients received no breakfast. At 9 A.M. a radio-opaque double-lumen Miller-Abbott tube was passed into the small intestine by the technique used by Miller and Abbott.[1] The tube was swallowed to the 72-in. mark, when the tip was about 40 in. beyond the pylorus, radioscopy being used to ascertain that the tube was not coiled in the stomach. The balloon was then deflated. After an interval of 30 min., suction of about 100 mm. Hg was applied to the lumen of the tube in communication with the small intestine. A trap was arranged so that the material obtained was collected in a bottle surrounded with ice. After the fasting juice had been collected for about 20 min., the patient swallowed 25 ml. of olive oil. The suction was continued and, whenever any alteration was noted in the character of the aspirated material, the bottle was changed. Fat began to appear in 30–90 min. after it had been swallowed, and specimens were collected until they no longer contained fat.

RESULTS

To the naked eye the material aspirated from sprue patients differed strikingly from that of the normal controls (see figure). Whereas that of the controls had the appearance of a uniformly suspended bile-stained emulsion, that of the sprue patients consisted of whitish threads and clumps suspended in a relatively clear bile-stained fluid. Microscopically these threads and clumps contained numerous fat droplets enmeshed in mucin-like material. In material obtained from normal patients droplets of similar size were seen, but they were evenly dispersed and not aggregated into clumps. In both the controls and the sprue patients most of the droplets stained blue with Nile blue sulphate (the specimens having been stored for 24 hours at 0° C), indicating the presence of fatty acids. Only a small proportion consisted of unsplit fat and stained pink, and this was well emulsified. Much of the mucoid material of the clumps also stained blue, suggesting the presence of fatty acids in a fine state of dispersal. Mucus stains (mucocarmine and thionin) showed small scattered conglomerations of mucus.



(a) *(b)*

Succus entericus 90 min. after feeding 25 ml. of olive oil by mouth to *(a)* normal subject; *(b)* sprue patient.

The extent of this abnormality varied in different patients. In some the clumps and threads were so abundant and thick that they blocked the tube, making aspiration very difficult, whereas in others they were much less plentiful. In general there was a rough correlation between the clinical severity of the disease and the degree of clumping.

In one patient the examination was carried out before and after successful treatment by diet and parenteral crude liver extract, and the character of the aspirated material changed considerably; clumps and threads in a fluid containing little emulsified fat gave place to only a few very small threads floating in a bile-stained emulsion of normal appearance.

It therefore appears that in the sprue syndrome fat is emulsified, and, as would be expected from stool fat-analysis, hydrolysed. The abnormality lies in either the aggregation into clumps and threads of the fatty material or the failure to disperse such aggregations if they occur as a transitory phase of normal digestion.

With the object of assessing the possibility of dispersing these clumps and threads, specimens of them from three patients were incubated at 37° C for 4 hours with fasting succus entericus:

(1) From normal patients;
(2) From normal patients with the addition of ox bile;
(3) From a patient with mild sprue;
(4) From a patient with mild sprue with the addition of ox bile;
(5) From a patient with severe sprue;
(6) From a patient with severe sprue with the addition of ox bile.

Good dispersal was obtained in (1), moderate dispersal in (3), and none in (5). The addition of ox bile to normal succus entericus (2) made no difference but did appear to increase the dispersal when added to sprue succus entericus (4) and (6). However, the dispersal was never so good as that obtained with normal juice.

DISCUSSION

The slender evidence we have obtained suggests that the clumps and threads consist mainly of fatty acids, both very finely dispersed and in droplet form, bound in a mucin-like matrix. Though it is generally agreed that mucus plays an important rôle in digestion, there is little detailed knowledge of its action. Mahlo and Mulli[2] have shown that it possesses both acid-combining and alkali-combining properties; and, despite little uniformity in experimental results, it seems fairly certain that mucin is considerably more resistant than other

1. Miller, T. G., Abbott, W. O. *Amer. J. med. Sci.* 1934, **187**, 595.

2. Mahlo and Mulli. *Dtsch. med. Wschr.* 1934, **60**, 1632.

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proteins to the digestive action of proteolytic enzymes.[3] In the intact rat mucus is well digested,[4] and the digestion of mucin is probably carried out by specific mucinases.

It has been suggested that mucus assists in the digestion of protein materials which become enmeshed in it, thereby being brought into close contact with pepsin and hydrochloric acid which have been adsorbed from the surrounding gastric juices. It is probable that mucus assists in the emulsification of fat, and it seems possible that, by adsorbing lipase, mucus also assists in the hydrolysis of fat. However, if the mucin is not digested, as appears to happen in sprue, there might well be some interference with the absorption of fatty acids.

The problem remains whether in sprue the digestion of mucus is impeded because the mucus itself is abnormal or because the digestive juices lack mucus-splitting ferment. The latter explanation seems to be the more probable in view of the dispersal of the threads and clumps from sprue patients when they are incubated with normal intestinal contents.

These findings are not in themselves of any value in elucidating the cause of sprue, but their biochemical implications deserve investigation, and it is hoped that they will supply a fresh approach for research which will shed further light on the cause and lead to more rational treatment of the disease.

Our thanks are due to Air Marshal Sir Harold Whittingham, lately Director-General of Medical Branch, R.A.F., and Air Commodore T. McClurkin, Director of Hygiene, R.A.F., for their encouragement and the facilities they have generously given us; and Mr. T. F. Macrae, D.SC., late wing-commander, R.A.F.

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RAYMOND DALEY, M.D. Camb., M.R.C.P., FLIGHT-LIEUT. R.A.F.
R.A.F. Institute of Pathology and Tropical Medicine, and Princess Mary's R.A.F. Hospital.

3. Anderson, R. K., Farmer, C. J. *Proc. Soc. exp. Biol., N.Y.* 1934, 32, 21. Carlson, A. J. The Control of Hunger in Health and Disease, Chicago, 1919.
4. Anderson, R. K., Fogelson, S. J. *Proc. Soc. exp. Biol., N.Y.* 1935, 32, 1204.

Medical Societies

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION

THE 105th annual meeting was held in Edinburgh from July 17 to 19.

Experientia Docet

In his presidential address Prof. D. K. HENDERSON said it was most important that psychiatrists should be well-trained physicians. Hippocrates had said that learning, sagacity, humanity, and probity were essential for a physician, and a good psychiatrist needed these qualities plus a detailed knowledge of his own science and art, and insight into the difficulties besetting those with neurotic and mental disturbances. He emphasised the need for better training in psychiatry, and its branches, for all general physicians in the future. "Psychiatry," he said, "is the other half of medicine and not just another specialty. It consists in understanding the science of man and in maintaining mental health so that life can be conducted at the highest level of efficiency." We should help to create conditions which would foster peace, in which science could be constructive and not perverted to destruction. He called for a higher sense of responsibility to family and social obligations. There was still much need for the study of emotional states relating to the effects on the total personality, as determined by the history of reactions in the past to stress and strain. This knowledge could be used curatively if breakdown should take place. The new dynamic forms of therapy must be related to the background in which the illness occurred, and to the human factor present in every illness. The humanitarian and scientific sides needed each other as man and woman. Multiple causes were at the root of every form of nervous and mental illness.

Immense contributions had been made to psychiatric knowledge by men who had patiently worked in the wards of mental hospitals, without recognition. General medicine dealt with cross-sectional to the exclusion of longitudinal study of the person. It was necessary to develop power to assess the whole individual and the way he felt and reacted to any incident. Interesting facts had lately been emerging about conduct and the emotional drive being bound up with the hypothalamic region of the brain, leading us to consider the possibility of a hypothalamic rhythm determining the type of personality. In treatment there was no stereotyped answer and no infallible panacea, but there was need for the psychiatrist to explain to the patient a general working hypothesis in clear non-technical language. Psychiatrists had a duty to express fearlessly their views in relation to all social evils. The challenge of the unfit should be met before they are born, or at latest in their early formative years. Professor Henderson saw the psychiatry of the future as a form of mental hygiene for all.

Education in Relation to Psychiatry

Prof. ALEXANDER GRAY spoke about the preventive side of mental hygiene and those aspects of education of the young which have bearing on mental balance and poise. He asked the question, What upsets the young? Processes of education were difficult to define; the school and the schoolmaster had no monopoly, for there was in addition the education of the home, the education of the Church, and the education of the world. There might be a conflict between these educations, particularly in relation to standards of truth and loyalty, and such conflicts gave rise to disturbing maladjustments in children. Distinction must be made between the vocational side of education—namely, how to earn a living—and the cultural side of education, which develops personality and the ability to lead a full life and to find enjoyment. Professor Gray drew attention to the way in which the education of the young had changed after each of the two wars. He contrasted the stable world of the second half of the 19th century with the present time, when the younger generation saw a world with no stability. Blind obedience was gone; this was a questioning age, and people wanted to know why. Among young people there were signs of frustration from which the older generation did not suffer. Learning as such was at present at a discount, and it was a problem to know how education could be made exciting and not meaningless. Under-occupation was just as serious as over-occupation, and he advised that the burden of work for the young people should not be eased too much. He stressed the value of cultivating the habit of regular work. If education was to be a preparation for life, it ought to provide for a perpetual barricade against boredom.

No two children were alike, and teachers must therefore strike the highest common factor for their classes. Since man was essentially a creative animal, it was necessary to guide and train the hand as well as the mind. The happiest man was the man who was doing something. There was a sense of satisfaction in doing things for oneself—for example, playing the piano badly—rather than watching or listening to others, even though much more expert. There was too much talk of appreciation of art. This was a poor substitute for art itself.

Professor Gray discussed religious education and the importance of having religion as a universal possession and guide and inspiration. He felt that this was a help to mental balance, but our religions were still tied to the idea of an angry God and Hell. Symbolical religion was possible for adults but not for children, and the concepts of the angry Tribal God and everlasting Hell were torture for the child. They had to unlearn a great deal and they might resent those who had taught them originally. He noted with pleasure the improvement in sex education which had taken place in the last fifty years, and the recession of the idea, so evident in the Jewish and Christian traditions, that woman was essentially evil.

Prof. JAMES DREVER spoke about the emphasis now being placed on the promotion of health. He said that

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the distance between the physician and the educator was steadily decreasing as this emphasis grew. The work of the teacher would impinge on the life of the pupil at a greater variety of points. According to the Ince report on Juvenile Employment Service, adolescents of 14–18 years would all receive vocational guidance of some sort. There were three main needs:

(1) To fit juveniles to jobs according to their aptitude, qualifications, and interests.
(2) To divert them from harmful and/or unsuitable jobs.
(3) To distribute the supply of juveniles better.

The main weight of this task would fall on the teachers, and the essential instrument in the scheme was the record from school life passed on to the Ministry of Labour —on the child's physique, intelligence attainments, aptitudes, and interests. Part of this work was nearer psychiatry than psychology, but it would have to be done by teachers. Teachers needed instruction in medical psychology as well as in normal psychology, and qualified psychiatrists should be available for consultations. Teachers must be trained to recognise what needed a specialist's care and opinion.

Mr. D. CRICHTON-MILLER (headmaster of Fettes College) outlined what he felt was required by teachers from psychiatrists. He wanted help with sex problems due to late marriage, economic conditions, and the moral structure of society. He wanted help not only with the boy but also with both his parents. Teachers were very conscious of their failures. He hoped that fewer failures were sent out from schools now than twenty years ago, but people all over the country were less well balanced, less happy, and less stable than they used to be. There were more parents who were unstable and without faith, and therefore there were more children in that state.

Dr. T. FERGUSON RODGER felt that, with the advent of the atom bomb, the most important problem of today was the right relationship between man and his fellows —i.e., education in human relationships. He called for examination of group behaviour and the application of the knowledge so gained to group treatment—the process of adjustment went on throughout life by membership of groups, beginning with the family group with its early infantile relationships which are studied by psycho-analysts. The knowledge they acquired, however, must be applied to groups, and the facts about group behaviour should be revalued. Much had been gained by group tests for officer selection during the war, involving need for group activity along with competition for leadership. The community should be organised along the lines of greatest usefulness of its members—i.e., on democratic principles. Experience had shown that groups might fall into three types—the laissez-faire type, where there was a good deal of bickering and wasted time; the democratic type, which did most work and did it without friction; and the autocratic type, which did a lot of work but in which the leader was hated and yet the group was lost without its leader.

Legal Aspects of Psychiatry

Dr. W. NORWOOD EAST said that well-doing for the sake of praise was not commendable. Most criminals were essentially selfish, and could not postpone immediate gratification for ultimate advantage. Environmental stress might produce crime in those who were potential criminals. Society must be jealous of its rights if these rights were to survive; therefore it did not accept with equanimity psychiatric pleas in relation to criminal behaviour. Punishment was a necessary evil. Unfortunately the criminal leaving prison often had a real hostility to society, and it was the duty of society to prevent this. This required a high standard of civic responsibility and improvement in social conditions. Retribution in terms of reformation should be our aim, but justice must of course be dispassionate. Psychiatric help should be available in cases of mental deficiency, psychopathic personality, and psychoneurosis, to ascertain the extent to which behaviour is attributable to psychiatric causes, and it should always be available on release of the criminal. Psychiatrists should remember that psychiatry was still in its infancy and that their reports might be fallacious.

Lord COOPER (Lord Justice Clerk) reminded the meeting that Zeus came before Æsculapius and eventually slew him with a thunderbolt! Law courts and psychiatry had recently been drifting apart, and they needed renewed interpretation of each other. Harm had been done by the exaggerated and unfounded claims of some psychiatrists. Courts liked to be reasoned with and convinced, not presented with a report which was dogmatic and contained few reasons for the conclusions reached. Lord Cooper spoke on the Scottish defence of "diminished responsibility," saying that it had become a recognised point of ethics for advocates to ask for examination by one or two mental specialists. This plea had been overdone recently and was now almost always rejected by juries. In the long run the test was that of robust common sense, as represented by the average jurymen. It went against the grain to accept an arbitrarily assigned class of persons who might commit crime with diminished or no responsibility. Too often the psychiatrist's evidence subordinated nearly every consideration to the rehabilitation of the defendant. But the psychiatrist as well as the judge owed a duty to the community. Sometimes there was notable failure by the psychiatrist to verify independently the data on which his conclusions rested, so as to convince both judge and jury. They should consider now the desirability and possibility of establishing a board of psychiatrists to which crimes, and especially sexual offences, could be referred for investigation and report. They should also consider the question of the application of psychiatric treatment only after the sentence had been served. Lord Cooper emphasised that the punitive element must take precedence over treatment.

Dr. W. M. MCALISTER said that the question of "partial or diminished responsibility" applied only when the charge was murder, and only in Scotland. In 1923 Lord Alness had laid down three points in this connexion —aberration of mind, mental unsoundness, and great peculiarity of mind. Unless a person was certifiably insane he must needs answer for his deeds. The psychiatrist must exercise the utmost care before expressing a categorical opinion on responsibility, and medical men must know the express terms and conditions of the law.

Social Aspects of Psychiatry

Miss NORA MILNES, speaking on rehabilitation, discussed unselfishness in family life, ordinary family frictions, and the endless grumbles within the family. It was hard, she said, to know for how long a returned prisoner-of-war wanted and required spoiling, and she asked her hearers to think of the difficulties which his wife faced. It was the job of social workers to deal with all the minor family troubles. Preventive psychiatry was a sociological problem, and social workers needed full training. The ordinary family case-worker required to know when to call in the expert. The psychiatric social worker was the outward expression of the revolution which was taking place in family case-work—really a revolution in human relationship. They were dealing with the non-material needs of people, helping them in their development and thus increasing their capacity for living with satisfaction in a social group. The psychiatric social worker dealt with diagnosis of special causes of ill health and with the influences of environment upon individuals.

Prof. L. S. PENROSE talked about the use and abuse of statistics, their interpretation, and their value. He said that Europe had shown an inverse ratio between the number of serious crimes and the number of certified patients. It had been demonstrated that when disturbed people were in mental hospitals there was less serious crime, but population survey regarding mental disease was very difficult. The crucial datum was not the number of patients in mental hospitals, nor the number of times a patient was in hospital, but the length of stay in hospital on each admission.

Prof. F. A. E. CREW, F.R.S., said that much had been learned from the major problems of the war, which were similar to the acute problems of the peace. The state of a people could be measured by death-rate, marriage-rate and birth-rate, illegitimacy, delinquency, unemployment, and many other factors, and the signs and symptoms of social ills had been abundantly recorded;

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but the positive side had been rather ignored. A man and woman were not individuals in a community but were members of a group. The yardstick of human optimism was the birth-rate. The marriage-rate was more than a measure of security; it was the index of the faith of the people in the future. The medical history of the war would record that the greatest contribution and greatest advance of boundaries had been made by psychiatry, both social and preventive.

Dr. A. S. PATERSON called for a card-index of sociological character, which would be most valuable in hospital work. He wanted to know the number of young men of high intelligence-quotient who had a sense of frustration because economic conditions prevented their early marriage. Frustration of parenthood might well lead to neuroses. Decay in family life had now spread to all classes. Psychiatry could help by paying more attention to the psychology of marriage and parenthood.

Reviews of Books

Injuries of the Knee Joint

I. S. SMILLIE, O.B.E., F.R.C.S.E., surgeon-in-charge, Larbert Orthopædic Hospital; director of orthopædic department, Falkirk and District Royal Infirmary. Edinburgh: E. & S. Livingstone. Pp. 320. 35*s*.

IN this book Mr. Smillie has recorded with care and thought his experiences in treating knee-joint injuries in Service and civilian patients during his work at a large Scottish E.M.S. hospital throughout the war. If his manner seems a shade too elaborate for his matter, perhaps this is partly due to the unfamiliar lavishness of this peace-time production. His follow-up of end-results might have been fuller, and it might have been wiser not to advocate some of the operations for ligamentous reconstruction, which in other hands than his are unlikely to prove satisfactory. But because he has described with great honesty the problems he met and the methods he worked out to deal with them, and because the standard of illustration is high, this book must be of great value for those dealing with these common and disabling injuries for the first time.

Traitement orthopédique de la paralysie infantile

M. BOPPE, chirurgien des hôpitaux de Paris. Paris: Masson. Pp. 222. Frs. 140.

As Dr. Boppe says, "la poliomyélite est l'affection orthopédique par excellence," and every textbook of orthopædic surgery has a long chapter on it. Yet though these contain good descriptions of methods of treatment—remedial exercises, the fitting of apparatus, and various operations—the paralyses resulting from poliomyelitis are so irregularly distributed that every patient presents a new problem. In this work the orthopædic treatment of poliomyelitis as a whole has been successfully presented, and the reader will gain by reading it straight through, so as to get a bird's-eye view of the complexities.

The treatment of poliomyelitis during the recovery stage is perhaps dismissed rather too briefly, and the importance of attempting to assess muscle-power quantitatively (as recommended by the peripheral nerve injuries committee of the Medical Research Council) is overlooked. He gives the duration of the period of recovery as 3–5 years for the lower limb and 18 months for the upper, but does not distinguish between the progress made by a patient adequately treated from the first, and that made by one who gets no adequate physical treatment until many months after the acute illness. Nor does he discuss the degree of functional recovery between, say, the second and fourth years: is it usually sufficient to influence the surgeon considering the treatment of residual paralysis? In the experience of many surgeons the final stage of recovery *for all practical purposes* is reached by the end of the first year, provided the patient has been well treated throughout.

But three-quarters of the book is devoted to the treatment of established paralysis, and here Dr. Boppe gets into his stride. Each region of the body is discussed in detail and the merits of various mechanical devices and of operations—for the most part arthrodesis and tendon transplantation—are considered with commendable detachment. He is concerned less with boosting this or that method than with fitting the various techniques to the needs of the individual. There are timely warnings about some popular procedures: an artificial bone block at the ankle will cause a painful traumatic arthritis sooner or later, and transplantation of the peroneus longus will cause deformity of the foot from elevation of the first metatarsal—to mention only two examples. Arthrodesis of the hip is sometimes the best remedy for paralysis of muscles controlling the joint, but those about to do this operation should be sure to read his appraisal of it.

Dr. Boppe's own experiences are briefly and modestly described in the appropriate places, and where he lacks personal knowledge of a particular method he says so. Only once does he forsake the judicial attitude, to commend an operation of his own for drop-foot; and oddly enough this is the same as the one described by Lambrinudi in 1927. This is a striking example of his apparently patchy acquaintance with the literature of orthopædics, the bibliography being most disappointing. Nevertheless the merits of his book far outweigh its shortcomings.

Medical Aspects of Growing Old

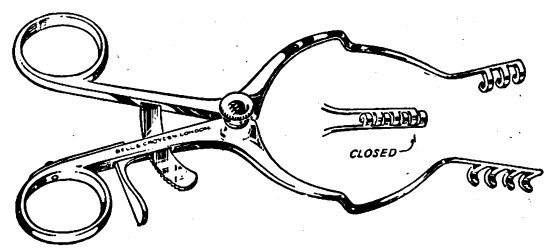
A. T. TODD, M.B. Edin., M.R.C.P., physician to the Bristol Royal Infirmary. Bristol: John Wright. Pp. 164. 15*s*.

TITLE and format somewhat belie the content of this book. It looks like another of those neatly arranged compendia of medical knowledge, a poor objective in terrain still mostly unexplored; really it is a product of Dr. Todd's own bedside and test-tube observations enlivened by dietetic heresy and philosophic temperament. Longevity, he says, must be treated from childhood; dopes to get disease signs away afford no help, and he thinks Shaw in *Methuselah* may not have exaggerated the possibilities of old age. Youth is brilliant largely because the young have so few data to sort out and so many places in which to store new ones. About the fear of death he has a remarkably wise and sane word. It is for such sign-posts towards exploring instead of regretting that the book should appeal to the second of the three classes for whom Dr. Todd is writing: the elderly subject who desires to make the best of his later life. The practitioner will gain most from the vivid applications of physiology to the whole business of growing old; who else would have tested the superiority of a fat-low diet by setting the elderly to solve difficult crosswords? It is a book to skim in the first place and then keep for daily reference.

New Inventions

RETRACTOR FOR VARICOSE VEIN SURGERY

THE instrument illustrated is a modification of a self-retaining retractor used in other branches of surgery. The main points to be noted in this retractor are as follows: (1) It is so designed that it does not get in the way of the surgeon, the angle of the shaft being adjusted



so that the retractor lies flat on either side of the wound. (2) The jaws give a firm grip on the tissues, allowing them to be lifted without slip. (3) The points of the teeth are so made that injury to neighbouring vessels should be avoided.

This retractor has been specially made for me by Mr. T. M. Proudfoot, M.B.E., of Messrs. John Bell & Croyden.

R. R. FOOTE, M.R.C.S., D.R.C.O.G.

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THE LANCET

LONDON: SATURDAY, AUGUST 3, 1946

Decisions

ANOTHER phase in the progress of the National Health Service Bill is behind us. A busy week saw the Bill pass through its report stage and its third reading. As these events almost coincided with the annual representative meeting of the British Medical Association, an attempt can now be made to re-examine the attitude of Parliament and the profession.

In the House of Commons, Mr. BEVAN had little difficulty in satisfying his party that his proposals are right and proper. Whenever a division was challenged, he was able to produce an effective majority—never less than a hundred—to endorse his policy, and no amendment which he did not accept had any hope of success. This is not to say, however, that there have been no alterations since the second reading. Indeed, as Mr. WILLINK remarked in his final speech for the Opposition, the discussion in committee, although it did not persuade the MINISTER to depart at all from the principles on which he built his Bill, did lead to several important liberalising changes. Mr. WILLINK drew attention especially to the improvements in the position of the Central Health Services Council, the power of the hospital management committees to accept and use voluntary gifts, the decentralisation in selection of the doctor succeeding to a practice, and the new rôle of the Medical Practices Committee as a registrar of bona-fide transactions between doctors and hence as their protector against groundless prosecutions under clause 35. He might have added that any prosecutions which may still be undertaken will have to be heard by a jury, and that summary conviction by a magistrate can no longer happen. The right of admitting and treating patients in the private wards of hospitals, originally confined to specialists, is now extended to every doctor working in the public service. Clauses have been put into the Bill to remove any fear that anyone serving on, or employed by, regional boards, hospital management committees, or executive councils, might by so doing be deprived of civil rights, such as the right of election to Parliament.

All these improvements are of course welcome. Nevertheless, if only for the sake of the agreement which has still to be attained, we wish the MINISTER had found it possible to carry his concessions a little further. Of the points that might, we believe, have been conceded without material transgression of his principles, two have disproportionate psychological significance. In committee, the provision that any appeal from the decision of a tribunal should be to the MINISTER, alone, was taken out; but the victory was, as Mr. BEVAN said, pyrrhic: no alternative provision was inserted. Many hoped that on report he would agree that an appeal should lie to the High Court, but the former clause was reinserted, and the MINISTER himself will again be the final judge in any dispute. It had been widely pleaded, too, that a basic salary, while advantageous and unobjectionable where it is needed to attract extra doctors to uncongenial areas, or to help establish the new entrant to practice, is unnecessary as a moiety of every general practitioner's remuneration. Mr. BEVAN resisted in committee an amendment that would have restricted his ability to offer basic salaries solely to doctors in such categories as these. Yet if he had been willing to accept either, or preferably both, of these suggestions, the Bill would have been improved, and its opponents in the profession would have been deprived of arguments which can be used with great effect.

No very drastic changes in the Bill can be expected from its passage through the House of Lords, and as things now stand it was hardly surprising that the representative body of the B.M.A. should ask itself whether the time has not come when doctors should individually be given the chance of saying whether they will be willing to participate in the service which is to be set up under the Act. Opinion is divided—not on the wisdom of asking, but on the wisdom of asking now, when the full shape of the new service, as it will be revealed by the regulations, is still unknown. Some maintain that when a man has no clear picture of the conditions under which he will be asked to work it is unprofitable to ask him whether he will join in the service. Others say that the principles of the Bill and those enunciated by the Negotiating Committee are so plainly irreconcilable that, whatever the regulations, there can be no question of acceptance; hence they feel that delay in decision is unwarranted, and coöperation with the Government in framing regulations or in setting up the instruments of administration of the Act is positively dangerous. The representative body reached what is in the circumstances probably the best compromise. The suggestion now adopted is that a referendum shall be organised at an early date, but that the question asked shall not necessarily require an immediate and final answer on whether service is acceptable. Instead, each doctor will be invited to say whether he thinks the Negotiating Committee, if given its promised opportunity, should return to discussions at the Ministry of Health, and there do all it can to ensure that the regulations shall produce a workable service offering the fairest obtainable terms and conditions for the profession. Those who are certain that they could never take service under the present Bill, however attractive the conditions were made, will obviously regard any parleys on regulations as redundant, and so will vote against them. By so doing they will register their conviction that service under the Act must inevitably be refused. On the other hand, a vote in favour of a return to negotiation would not be final: it would be tantamount to reserving judgment on acceptance or refusal until the MINISTER'S detailed intentions are revealed.

The B.M.A. has, we believe, shown sound judgment in focusing attention on what must be the crucial question of the coming months. We shall hope to see this question put to the profession as objectively, and as little tendentiously, as possible. If it is so put, the answer will tell us much more about the real wishes of the doctor-in-the-street, and the proportions in which the different views are held, than could be discovered from any delegate conference, however carefully convened.

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Streptococcal Throat Infections

SCARLET FEVER is today so mild that special therapeutic measures seem unnecessary. Commercially prepared antitoxin is used to a fair extent in this country, partly as an antidote to the initial toxæmia but more because of its effect in reducing desquamation and so facilitating early discharge of the patient from hospital or from isolation at home. In America convalescent serum has been preferred, but, as a recent study [1] shows, it is probably less effective than the commercial antitoxin.

The trouble with scarlet fever is not the severity of the initial infection but the risk of complications like otitis media, adenitis, and scarlatinal relapse among patients nursed in open hospital wards. These complications are mostly attributable to cross-infection with streptococcal types harboured by other patients or present in the dust of the ward. The control of such cross-infection may be attempted either by eliminating the reservoir or by blocking the channels of spread, and the first of these procedures has obvious advantages if it is practicable. Sulphonamides, administered locally in the form of lozenges or systemically, usually fail to eliminate hæmolytic streptococci from the throat, though the numbers may be temporarily reduced during treatment. The advent of penicillin promised more success, but again local therapy with sprays, lozenges, and the like has been disappointing. With more plentiful supplies systemic therapy has now been given a trial, and the results suggest that it will eliminate hæmolytic streptococci from the throat either temporarily or permanently according to the duration of treatment. Thus, in one investigation [2] of 118 cases of scarlet fever, mostly infected with sulphonamide-resistant streptococci, a total dosage of 240,000 units, given in 10,000-unit doses three-hourly for three days, temporarily eliminated the organism in practically all cases, but the percentage of positive throat cultures was higher after treatment than before treatment was begun; on the other hand, in a group given 480,000 units over eight days (10,000 units three-hourly for four days and 10,000 units six-hourly for four days) only 8% had positive throat cultures after treatment compared with 85% at onset. The incidence of complications after the short course was 31% and after the long course 6%. The immediate clinical response in all cases was good. In another trial [3] of systemic penicillin in the treatment of streptococcal tonsillitis and pharyngitis, alternate cases were given 20,000 units of penicillin every four hours for three days, and if the patient still had positive throat cultures at the end of a week another course of 360,000 units was given. The criteria of streptococcal infection were positive throat cultures and a significant rise in antistreptolysin titre during convalescence. Clinically the most obvious effect of penicillin therapy was a reduction in the duration of pyrexia from five days in the control group to three days in the treated group. The rate of disappearance of exudate and inflammation was similar in the two groups. Of 59 treated patients, 20 had positive throat cultures a week after the beginning of treatment, and 11 of these developed clinical exacerbations, whereas only 4 of the 39 culturally negative cases showed a recrudescence of symptoms. At the end of a month 6 of the 59 treated cases (including the 20 cases given a second course of penicillin) had positive throat cultures, compared with about half the control cases. However, complications were equally frequent in the two groups. The conclusion drawn was that a six-day course of penicillin is needed to eliminate the organism from the throat of most patients. In view of the disadvantages to patients and staff of three-hourly intramuscular injections for a week, oral therapy (180,000 units daily in six doses) was tried in 20 patients for six days and the clinical and bacteriological results were almost as good as with parenteral administration.

Another approach has been adopted by HAMBURGER and LEMON.[4] Earlier studies had indicated that heavy nasal carriers of hæmolytic streptococci were the important reservoirs from which infection was disseminated in hospital or barracks,[5] so it seemed logical to try to eliminate these reservoirs. Prophylactic doses of sulphonamides had apparently been successful in cutting short outbreaks of streptococcal infection, and this effect might reasonably be attributed to cure of the nasal carriers. A group of 26 nasal carriers, all acute cases in hospital, were therefore treated with 1 g. of sulphadiazine daily for five to ten days. Using different quantitative methods of culture from the nose, the American workers found a significant reduction in the organisms expelled by 22 of the 26 carriers, and in fact the ordinary nasal swab culture became negative in most of the cases within two to five days. Of the 4 non-responding patients, 2 carried sulphonamide-resistant streptococci, 1 had inadequate sulphonamide blood levels, and the fourth had maxillary sinusitis. Hæmolytic streptococci were demonstrable in the nose cultures, usually in small numbers, in 95% of the cases after treatment, and in most instances the throat cultures remained positive throughout. Sulphadiazine was also given to a group of ambulatory cases in daily doses of 1 g. for thirty-two days; of 29 carriers of sulphonamide-sensitive streptococci, 26 responded rapidly, whereas only 1 of 6 carriers of sulphonamide-resistant streptococci became negative. In another group of ambulant cases a five-day course temporarily eliminated the organism from the nose in two-thirds of the cases; but nearly all relapsed afterwards, compared with only a quarter of those given the longer course. A further small group of 14 nasal carriers—7 acutely ill and 7 ambulant—were each given a daily injection of 300,000 units of penicillin in beeswax oil for five to seven days. In every case there was rapid elimination of the organism, and 7 of the 14 remained free from infection in follow-up periods of eleven to seventy-two days. Of the remainder, only 2 relapsed as heavy nasal carriers.

Small doses of a sulphonamide given for several weeks involve the risk of inducing drug-fastness in the infecting organism and of sensitising the patient. If the nasal carrier responds to sulphonamide therapy (the results reported by RENTZ and his colleagues [6] do not substantiate the claims of HAMBURGER and

1. Ashley, P. *J. Amer. med. Ass.* 1946, **130**, 771.
2. Epidemiology Unit no. 82, U.S. Naval Medical Service. *Amer. J. med. Sci.* 1946, **211**, 417.
3. Keith, J. D., MacLennan, J., Williamson, J., Carpenter, J., Armstrong, C. *Canad. med. Ass. J.* 1945, **53**, 471.
4. Hamburger, M. jun., Lemon, H. M. *J. Amer. med. Ass.* 1946, **130**, 836.
5. See *Lancet*, 1946, i, 166.
6. Rentz, L. A., Spink, W. W., Boissert, P. J. *Bull. U.S. Army Med. Dept.* 1946, **5**, 662.

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LEMON) it would be wiser to give therapeutic doses for a week or less, or to use sulphonamide snuff. Such treatment will not eliminate the organism from the throat, and it remains to be seen whether negative cultures from throat as well as nose must be insisted on if streptococcal infection is to be checked in scarlet-fever wards, schools, nurseries, and training camps. If so, penicillin given for six or seven days seems preferable for controlling the spread of streptococcal infection in susceptible communities.

Diet and Structure in Dental Caries

THAT a rising incidence of dental caries has run concurrently with progress in civilisation is an historical fact. That change in diet has played its part in this increase does not seem open to much doubt. But whether the change in diet has acted directly by producing conditions in the mouth favourable to the growth of organisms responsible for attack on the enamel, or indirectly by interfering with efficient formation of the enamel and thus rendering the tooth more liable to attack, has caused much controversy. The actual mechanism of attack is not yet fully understood. MILLER's well-known theory that carbohydrate breakdown produces lactic acid which dissolves the enamel does not fit all the known facts. More recently PINCUS has suggested that proteolytic organisms may inaugurate the attack by producing dissolution of the organic matrix of the enamel and thus causing the inorganic prisms to fall apart. There is evidence that some anaerobic proteolytic organisms are capable of causing lysis of the organic matrix in vitro; this requires further investigation. M. MELLANBY's work on dogs showed that deprivation of vitamin D resulted in hypoplasia of the enamel, and this brought into prominence the possible significance of the structure of the tooth in influencing the incidence and severity of caries. It was a common observation among dental surgeons that the gross structure of the tooth was an important factor in caries production, and teeth showing deep fissures were known to be more liable to attack. The vitamin conception, however, was a new one, and it was suggested that minor degrees of hypoplasia of the enamel due to vitamin-D deficiency in the human formed the weak points through which attack took place. It remained to be explained why in gross hypoplasia of the enamel due to hereditary or acute zymotic causes, where the teeth are reduced to mere pegs of dentine externally, caries is less in evidence than in normal teeth.

Numerous large-scale experiments among schoolchildren have been undertaken to evaluate the addition of extra vitamin D to the diet, but these have not been very conclusive. The incidence of dental caries is equally low among Eskimos eating largely meat and fat and among African tribes eating quantities of sugar-cane, and various attempts have been made to estimate the value of unrefined foods in the diet as distinct from the refined and cooked foods more generally used under prevailing civilised conditions. The "Oslo breakfast" originated from experiments along these lines, and results in children did seem to show that dental caries was less common among those eating unrefined foodstuffs. Whether this was a direct effect or an indirect one due to improvement of enamel structure was still not entirely clear.

The data set out by Sir FRANK COLYER in the first of the Charles Tomes lectures on Dental Disease in Animals [1] are highly relevant to the human problem. In an extensive survey of the incidence of dental caries and parodontal disease in wild and captive animals it has been shown that caries is far more common in captive animals whose diet has changed from that of the wild state, and that the mode of onset of caries is also altered. In the anthropoid apes, for example, in the wild state the carious process is found only where the dentine or the cementum of the root has been bared by attrition or food packing. It never starts in the enamel and is far more common in the incisors than in the molars (103 to 3), probably because of the greater wear on the incisors. The same general findings, with slight variations in prevalence and distribution, have been obtained in both Old and New World monkeys, though caries is rather less in evidence among those from the New World. It is interesting that the disease seems to be more prevalent among monkeys from certain districts. From these investigations it is clear that dental caries in apes and monkeys only occurs where food is liable to stagnate; in the wild animal it starts, with very few exceptions, in the dentine or cementum, leaving the enamel untouched, whereas in the captive animal it starts in the enamel. The same general freedom from caries in the wild state, and high incidence in captivity, has been observed in the ungulates, rodents, and carnivores. These observations raise the question whether the comparative immunity of wild animals is due to some peculiarity in the structure of their teeth and whether the enamel of the wild animal is more perfectly formed than in the human. Prof. EVELYN SPRAWSON, at Sir FRANK COLYER'S request, examined the enamel of 280 wild animals of 60 species, including apes, monkeys, carnivores, and rodents, and compared the structure with that of human enamel. He concluded that on the average the enamel of wild animals is of poorer quality than human enamel in respect of density and completeness of calcification.

The inference from this work is clear. Of recent years much effort has been directed towards improving the structure of the teeth, particularly of the enamel, on the hypothesis that the better the structure the lower the incidence of dental caries. If this structure is already better in human beings than in wild animals, which seem to be almost free from the disease until subjected to artificial alteration of their diet, we must look elsewhere for the origin of caries, though the animal evidence still points to the artificial "civilised" diet as the main factor underlying the causation of the caries. This view finds support in the Norwegian observations summarised in these columns last week.[2] In Norway the falling incidence of caries has been ascribed in some quarters to the monotonous diet of war-time. Be that as it may, we are certainly not prepared to return to a diet of fruit and leaves now, when most of us are hoping soon to indulge once more in the sticky and glutinous messes which delight our sophisticated palates. Further research is needed; and perhaps it is the mechanics and chemistry of food in relation to the teeth, rather than the structure of the teeth themselves, that should be considered first.

1. Delivered at the Royal College of Surgeons, Lincoln's Inn Fields, on July 11.
2. See *Lancet*, July 27, 1946, p. 129.

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Annotations

THE CAPITATION FEE

LONG before the war panel practitioners repeatedly asked for an increase in the capitation fees paid under National Health Insurance. Their carefully prepared case was shelved in 1939, but the necessity for reassessment of the fee has never been forgotten. During the war the payment for each insured person was increased from 9*s.* to 10*s.* 6*d.*, but much of this increase was to allow for the higher expenses of practice, and some of it, the recipients were told, was meant to compensate for the inclusion (without prior consultation) of the £250–£420 income-group in the health insurance range. The increase is widely felt to be trivial, indeed non-existent in view of the change in the value of money since 1939, and many practitioners are working under a strong sense of injustice. Latterly, when the Insurance Acts Committee voiced this feeling, it was told that nothing could be done until the Spens Committee reported. On the appearance of the report, therefore, a new approach was made to the Ministry; and the resulting correspondence between the Minister and the I.A.C. has now been published.

Apparently an impasse arose early because the Minister, not unnaturally, wished to discuss at the same time the remuneration to be offered to practitioners in the National Health Service which will supersede National Health Insurance in April, 1948. This the I.A.C. refused, having neither the mandate, nor the inclination, to consider the more permanent arrangements. One of the reasons for its attitude was no doubt that the Minister's plans for medical remuneration (as set out in the white-paper on the Bill) include basic salaries and variable capitation fees—proposals which are foreign to present insurance practice and are probably unwelcome to the majority of the profession. But even though the I.A.C. has been unable to secure the limited negotiations which it sought, it has at least won an important pronouncement from Mr. Bevan, which he had hitherto refused to make, despite repeated demands in Parliament. It has obtained a firm statement of his views on the Spens report: "the Minister desires to make his attitude to that report quite clear. He fully accepts the substance of the recommendations of the committee in their majority report." This statement means in effect that the figure for capitation fees in the new service will be based not on an adjustment of past capitation fees but on the range of incomes suggested by the majority of the Spens Committee—translated into post-war money.

Meanwhile the Minister has also, by accepting the Spens verdict, tacitly agreed that panel doctors have been, and are being, inadequately paid. Having failed to secure the general discussions which he on his side wanted, he offers, for this intermediate period, what is no doubt a smaller sum than negotiations would have obtained: he is willing to pay an extra 2*s.*, making a total capitation fee of 12*s.* 6*d.*, from Jan. 1 of this year. To this the I.A.C. replies that 12*s.* 6*d.* is "gravely inadequate." It says that it would be willing to recommend acceptance of an interim fee of 15*s.*; or, if the Minister prefers, would accept arbitration by the Spens Committee, whom it now suggests "should be asked to state the implications of its majority report in relation to the current insurance capitation fee."

There at the moment the matter stands, awaiting the Minister's reply. It will be a pity if no acceptable solution can be found, either by negotiation or some form of arbitration. The preparations for a new era in medicine ought not to be marred by the persistence of the sense of frustration and injustice engendered by unsatisfactory handling of the problems of an old and passing day.

RADIO-ACTIVE IODINE IN TOXIC GOITRE

IODINE was one of the first elements to be made radio-active artificially (in 1934), and for some years experiments have been in progress in the U.S.A. to determine its effects on the thyroid. It is known now that in a patient not under the influence of iodine 80% of a dose of radio-active iodine is taken up in the thyroid within a short time of ingestion. It there gives off rays which generate high-speed electrons, and these affect neighbouring tissues to a distance of a few millimetres. This effect is the same as that ultimately produced by X rays, but the internal radiation has two advantages in that it does not have to penetrate the skin and other overlying tissues, and that it is probably distributed evenly throughout the gland. Theoretically therefore radio-active iodine should produce better results in toxic goitre than X-ray therapy, which in the opinion of most clinicians has not been a success, and this is verified by recent clinical reports.[1] The radio-active iodine is taken by mouth within a few hours of its preparation, as an almost tasteless liquid. Occasionally there are slight toxic effects, including pyrexia and nausea for a day or two. The patient must have taken no iodine for several weeks previously.

Of the 51 cases reported in the two papers it is claimed that four-fifths were restored to normal, the basal metabolic rate falling to normal in one to five months, and the gland shrinking in many cases to normal size. Fibrosis is produced in the gland by this method, as shown by biopsy. In 9 cases hypothyroidism or myxœdema resulted, though in 5 this occurred only after a subsequent thyroidectomy, and in 2 of the others the B.M.R. rose spontaneously to low normal levels. The dose of radio-active iodine is calculated in millicuries, and the strength required is proportional to the size of the goitre. Most of the patients required only a single dose, but others required two or three. These results are so good that many British workers will hope that radio-active iodine will soon be available here so that they can confirm them. The method has the advantage, from the patient's point of view, of extreme simplicity, and apart from the possibility of myxœdema it seems to be free from risk.

MENTAL ILLNESS AND SCOTTISH LAW

EARLY treatment offers the best hope of cure in many conditions, but is nowadays of special importance in mental illness, since many modern therapies give their best results only in the early stages. The laws devised in the past to guard the patient's interest may now sometimes prove a handicap to him if they deter his friends from seeking proper treatment for him at the outset. In Scotland, laws concerning the mentally ill and defective are contained in a series of Acts, the most important being the Lunacy Act of 1857, the Amendment Acts of 1862 and 1866, and the Mental Deficiency and Lunacy Act of 1913. The committee, under the chairmanship of Lord Russell, of the Scottish Court of Session,[2] appointed in 1938 by the Secretary of State for Scotland to inquire into these laws, have now published their report[3]; and they lay great weight on possible causes of delay. Voluntary desire for treatment has been recognised as important in Scotland ever since 1857, when the Royal Lunacy Commission recommended statutory provision for voluntary patients. Local authorities have

1. Hertz, S., Roberts, A. *J. Amer. med. Ass.* 1946, **131**, 81; Chapman, E. M., Evans, R. D. *Ibid*, p. 86.
2. The committee was constituted as follows: Lord Russell, chairman; the Hon. Mrs. J. E. Hamilton; Prof. D. K. Henderson, F.R.C.P.E.; Sir James Irvine, F.R.S. (resigned 1938); Mr. William Leonard, M.P.; Sir Basil Neven-Spence, F.R.C.P.E., M.P.; Mr. W. D. Patrick, K.C.; Lord Provost John Phin; Bailie Violet Roberton; Prof. T. M. Taylor (resigned 1944); Dr. A. G. W. Thomson; Mr. George Andrew. The secretary was Mr. J. A. W. Stone.
3. Report of the Committee on the Scottish Lunacy and Mental Deficiency Laws. Department of Health for Scotland. Edinburgh: H.M. Stationery Office. Pp. 131. 2*s.*

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no statutory duty to aid such patients, but of late years some of them have encouraged suitable patients to enter hospital voluntarily by giving them aid from the rates; and on Jan. 1, 1946, of 2081 voluntary patients in Scotland, 374 were rate-aided. That good use is made of the provision for voluntary treatment is evident from the fact that, in 1945, out of 4132 admissions to mental hospitals 1945—nearly half—were voluntary. As the law stands, no-one can be admitted as a voluntary patient if his mental condition is such that certificates of insanity could legally be granted in his case. In practice, it seems, this requirement is not always met, patients sometimes being admitted on a voluntary footing even when they might legally be certified. To get over the difficulty, the committee recommend that this part of the law should be redrafted on the lines of the English Mental Treatment Act of 1930. Prof. D. K. Henderson dissents from this on the ground that, in Scotland, once a patient has entered a mental hospital voluntarily it has been customary to let him remain there on that basis regardless of the progress of his illness; and that this has proved beneficent. Merely to accept the English pattern, he thinks, "would convey a very limited benefit to our patients, and much confusion and irritation to those who were responsible for administering the Act." Certainly many with experience of the English Act would feel that, though it safeguards some of the patient's interests, it disregards others. The committee were unanimous, however, in emphasising that, as far as possible, compulsory detention should be applied only where the patient is unable or unwilling to give his consent to treatment. This granted, they hold that procedure for the admission of people to mental hospitals needs simplifying.

In their study of the mental-deficiency laws the committee rejected the suggestion that mental deficiency, like lunacy, should be made a plea in bar of trial. Professor Henderson, who seems to have had trouble in persuading his fellow committee-members to share some of his views (he is responsible for all five reservations to the report, being joined in the last by Lord Provost John Phin), again dissented, arguing that, owing to their deficiency, mental defectives are not so well able to control their thought and actions as the better endowed, and in fact never have a normal appreciation and understanding of the disordered act. When an accused person can be unequivocally classed as a mental defective, of whatever grade, Professor Henderson holds that a plea in bar of trial should be sustained—a view which many of his medical colleagues will share. The committee concede that where mental defect is proved it should be a bar to a punitive sentence; and that any mental defective committing a criminal offence should be sent not to prison but to an institution. They recommend that a new State institution should be built for mental defectives of a criminal or violent type, and that a central index of mental defectives should be set up, so as to ensure that no mental defective is sent to prison. For adolescents showing unstable behaviour, "whose mental capacity and conduct touch only the fringe of insanity or mental defectiveness or criminality," new legal provisions are recommended, to bring them under training or supervision in a colony or institution in which they will be studied and treated medically and psychologically, with a view to helping them to become useful citizens.

The committee are anxious to see mental health divorced from the scope of the poor-law. The provisions for dealing with dangerous lunatics are in the 1862 Act, and authorise a procurator-fiscal or an inspector of the poor (now a public-assistance or welfare officer) to apply to the sheriff for appropriate action in the interests of the public, and the sheriff may then commit the patient to a mental hospital to be detained until cured or until "caution shall be found for his safe custody." These provisions are not limited to pauper lunatics, but are applied to any person found by the sheriff, on inquiry, to be insane and dangerous, even though he is not receiving parish relief or otherwise coming within the definition of a pauper. No such stigma attaches to the person who needs help on account of physical illness, and it seems likely that this provision, perpetuating the association of mental illness with the poor-law, has often caused delay in treatment of the patient, the relatives naturally being reluctant to have him classed as a pauper lunatic. The committee recommend that mental health should be removed entirely from the scope of the poor-law, and that lunatic wards of poorhouses should be closed down as soon as accommodation in mental hospitals can be sufficiently increased.

Professor Henderson dissenting, the committee decided that a study of the position of the mental-health service under the National Health Service scheme was not covered by their remit, but they express a hope that future administration will safeguard the interests of mental health and mental patients, and that there will be a special department of the central health authority to deal with them.

MEDICAL CARTOGRAPHY

THE value of the familiar spot maps that commonly decorate the walls of administrative health offices depends largely on the efficiency of the methods of disease notification and collection and correlation of data. The unreliability of the human factor, in diagnosis for example, must also be respected. Thus, in the M.E.F. during the war, as soon as sandfly fever was declared a notifiable disease its "incidence" fell dramatically, but many more cases of "coryza" were diagnosed. Nevertheless, the American Geographical Society believes that when a geographer rather than a medical man brings his endeavours to bear on medical maps he can show that the influence of environment holds the key to understanding or control of at least some human diseases. The society proposes[1] to produce an atlas of diseases; and a geographical analysis of the distribution of fluorine in the water-supplies of the United States has already been undertaken.[2] This subject has been selected because of the relationship of dental health to the fluorine content of drinking-water, and the growing public interest in its importance. Outstanding work on this relationship has been done in the U.S.A. by H. T. Dean, and he has been chosen as consultant for the investigations necessary to the production of the atlas. The maximum fluorine content known for each county forms the basis of the map and on this has been plotted, as a regional pattern, the distribution of fluorine by joining values of stated fluorine concentrations by isolines. The sanitary engineers, health officers, and geologists of every State are said to have coöperated nobly by collecting and providing statistical information, but the difficulties of the undertaking were still weighty. Incompleteness of data was one of the major problems. For example, before 1932 no attention was given to the fluorine content of water-supplies in the U.S.A., and even today the fluorine test is not universal in water analysis. Again, the fluorine concentration in water fluctuates widely during the year; other factors required for mapping are also subject to local variations—e.g., depth of wells and nature of rock strata. The map gives no information on the nature of individual water-supplies and the number of people affected by them. Thus, the map is not free from defects as an instrument of scientific research and a practical expedient in epidemiological studies.

The American Geographical Society has further chosen ten diseases for representation in the new atlas:

1. Light, R. U. *Geogr. Rev.* 1944, **34**, 636.
2. van Burkalow, A. *Ibid*, 1946, **36**, 177.

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cholera, the typhus group, malaria, yellow fever, goitre, plague, beriberi and pellagra, filariasis, elephantiasis, and schistosomiasis. It will certainly be a useful act to review the distribution of these conditions. During the war years the contact of large groups of men from military necessity, malaria prophylaxis, immunisation, mass acclimatisation to unaccustomed conditions, deficiency disease in prison camps, and the effects of air travel on the spread of disease have combined to produce drastic changes in the incidence of disease. One may hope that in time the atlas will be extended to include not only the U.S.A. but the whole world, serving as a tool of research rather than a textbook. An attempt to prepare a global epidemiology [3] has already been begun elsewhere for the Medical Department of the U.S. Army, though in a less graphic manner and based on a correlation of local geography and climate, public health, medical facilities, and diseases. It will be interesting to compare this survey with the proposed atlas of diseases.

PASTEURISATION AND CHILD HEALTH

THE small party sent out to North America two years ago to see the methods of production and marketing of milk in the United States and Canada [4] emphasise the fact that pasteurisation is almost universal in North America; and the importance of this practice to child health has been brought out very clearly by Lethem,[5] who summarises the mortality from abdominal bovine tuberculosis in England and Wales during the period 1921–44, as follows (actual number of deaths in parentheses):

DEATH-RATES FROM ABDOMINAL TUBERCULOSIS PER MILLION CHILDREN UNDER 5 YEARS OF AGE LIVING IN EACH AREA

—	1921	1930	1938	1944
London administrative county..	136 (51)	24 (8)	12 (3)	6 (1)
Combined county boroughs ..	437 (490)	157 (166)	63 (57)	35 (32)
Combined urban districts ..	366 (390)	134 (139)	77 (66)	42 (42)
Combined rural districts ..	252 (176)	92 (57)	63 (31)	60 (37)

Abdominal tuberculosis in young children, which is predominantly bovine in origin, gives in its incidence-rate a better indication of the trend of the risk of milk-borne infection than any other clinical type of tuberculosis. The table shows that the most dramatic decline in abdominal tuberculosis has been in the London County Council area, though a slighter decline has also occurred in other districts. These trends can be correlated with the completeness of pasteurisation in each of the areas. Of the milk supplied in 1938, in London 98% was pasteurised, compared with only 60% in the county boroughs, while the consumption of raw milk was greatest in the rural districts. Despite the dangers inherent in "bulking" milk-supplies, and the environmental disadvantages of city life, the death-rate in London had declined by 1944 to a twenty-third of the 1921 figure, whereas in the rural districts the rate had fallen to a quarter of what it was in 1921. The death-rate in London in 1944 was a tenth of that in the rural districts. It would be unwise to assume from these figures, suggestive as they are, that pasteurisation alone was responsible for the happy state of affairs. Its effects must be considered in relation to all the improvements in environmental conditions which have brought about the consistent decline in tuberculosis mortality since 1920. Nevertheless there is little doubt that pasteurisation has been a major factor in the prevention of bovine tuberculous infection in children. In the recent House of Lords discussion of dairy-farming, the usual arguments about the deleterious effects of pasteurisation were raised, but no figures comparable in scope and conviction with Lethem's data were produced in substantiation. Unless and until better statistical evidence to the contrary is produced, we should do well to act on the implications of his findings. The mission's report on milk-marketing methods in North America has covered the practical details. It remains for administrators to put these recommendations into effect, for the country cannot afford the wastage of child life entailed by too sensitive a regard for the prejudices of part of the farming community.

3. Simmons, J. S., Whayne, T. F., Anderson, G. W., Horack, H. M. Global Epidemiology, Philadelphia and London, 1944.
4. Milk in North America. H.M. Stationery Office. 1946. See *Lancet*, July 27, p. 127.
5. Lethem, W. A. *Mon. Bull. Min. Hlth & E.P.H.L.S.* April, 1946.

THE INDEX-CATALOGUE

THIS summer the United States Army Medical Library at Washington (more familiarly known as the Surgeon-General's) has sent over the recent volumes of its famous *Index-Catalogue* to bring up to date the sets in British medical libraries. These volumes had been held in store since the whole British consignment of 1941 was sunk in the Battle of the Atlantic. Their arrival recalls the debt we owe to the compilers and producers of the *Index-Catalogue* and ultimately to the United States Congress, who pay for its printing and free distribution throughout the world.

The catalogue was launched with vision and enterprise by Dr. John S. Billings 66 years ago, and Billings truly said that it would "be useful in St. Petersburg, for example, as well as in Washington, its measure of utility in any locality being the extent of the collection of medical literature therein." It has now reached its 56th volume and is half-way through the alphabetical arrangement for the fourth time, having listed 2,500,000 articles and 400,000 books under their subjects, besides half a million entries under authors' names. The distribution list, published for the first time in the 1943 volume, shows that 800 of the 1000 copies printed are given away by the American government, no less than 69 copies coming to the British Isles, for libraries and other medical institutions. The visitor to a medical library in any country will always be shown the position of the *Index-Catalogue*, often with the grateful remark "They index our collections for us," though naturally it is of greatest value to English-speaking people. Without this subject index the medical reader would have to make a tedious search through the volumes of the *Index Medicus*, each of which covers only six months' output, and for the earlier publications he would have to wade through the long series of the periodicals themselves.

Criticisms of the *Index-Catalogue* have of course been heard, for no work of such a scope can be perfect. And it has been admitted that the library lived on its past reputation through the slump of fifteen years ago, while the catalogue fell below its own high standard of comprehensiveness. But under the wise and enthusiastic rule of Colonel Harold W. Jones, who has lately retired after nine years as librarian of the world's greatest medical library, both library and catalogue have been imbued with new life. The catalogue is in the able hands of Dr. Claudius F. Mayer, a distinguished medical scholar. The new connexion between the U.S. Army Medical Library and the Library of Congress, and the correlation of the *Index-Catalogue* with the American Medical Association's *Quarterly Cumulative Index Medicus*, will ensure the maintenance of accuracy and inclusiveness. Everyone who seriously follows medical writings will acknowledge his deep debt to the famous reference work which Dr. William H. Welch called America's greatest contribution to medicine.

Mr. WILLIAM GEMMILL, professor of surgery in the University of Birmingham and surgeon to the Queen Elizabeth and General Hospitals, Birmingham, died at his home at Edgbaston on July 28.

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Special Articles

BRITISH MEDICAL ASSOCIATION

ANNUAL REPRESENTATIVE MEETING

MEETING in London from July 23 to 25, with Dr. J. B. MILLER in the chair, the B.M.A. representative body heard a statement from Dr. GUY DAIN, chairman of council, on negotiations with the Minister of Health on the National Health Service Bill.

The B.M.A. and the Bill

The Minister, said Dr. Dain, had adopted Mr. Willink's plan almost in its entirety, but had added nationalisation; he had refused to negotiate on the principles of the Bill—namely, State ownership of hospitals, direction, the abolition of sale and purchase of practices, and part-payment by salary. In Dr. Dain's opinion, none of these additions would improve the service to patients, and none of them was necessary; they simply carried out the ideals of the Socialist party.

The ownership of hospitals had not been contested by the hospitals themselves as hotly as might have been expected. There was no scope for a consultant practising outside the service, since he must have access to hospital beds. The general practitioner was to be brought under control by the abolition of sale and purchase of practices and by direction; a practitioner who wanted to move would have to get permission from two committees and a central body. The Minister had said that he did not think that members of the medical profession were ripe to become salaried officers of the State; but he had not conceded any of the important issues that had been raised, such as the right to appeal to the courts from the Minister's decision regarding a doctor's retention in the service. The Minister had retained the right to do everything himself; in his hands was to lie the constitution of committees and councils and even selection of their chairmen. Should doctors enter the service on these terms? (Cries of No!) It would mean Civil Service dictation.

The Minister was apt to think that the doctors were talking airy nonsense. The special representative meeting of the B.M.A. in May had declared that they would not accept direction, State ownership of hospitals, abolition of rights in goodwill, or modification of the capitation fee. One side must give way; and a conflict was inevitable. The Minister should have followed South Africa's example and sought the doctors' advice before composing the Bill. If the meeting stood by the decision reached in May, it would be impossible for the council to negotiate on the regulations. The question had become political; Socialists would be prepared to work the service, but others were not prepared to join it under present conditions.

There came a moment when doctors must ask what action should be taken. The question was, should negotiations be broken off unless the association's principles were conceded? Doctors would perhaps be tempted by a generous financial offer. A special representative meeting might be necessary to decide the date on which a referendum should be put to the profession. It might be wise to wait for this until the Bill was enacted; the final form of the proposed service would then be known. If the profession agreed that the service would be a bad step, it was in a strong position for ensuring that what it thought best for the public was carried out.

A REFERENDUM?

Dr. D. C. BARRON (Sheffield) agreed with Dr. Dain, but suggested it would be unfair to have a referendum now without giving further guidance from the representative body. Other speakers called on the profession to make up its mind, and stick to its decision; it should be determined from the plebiscite whether or not the Act was to be fought.

Dr. G. P. WILLIAMS (Caernarvonshire and Anglesey) reminded the meeting that the Bill was nearly law; a small section of the community, such as doctors, would not dare to fight the law, much as it might dislike it. What was at stake for the general practitioner if he refused to work the Bill? The gap between solvency and insolvency was not great; to many, panel fees were a standby. If doctors opposed the law of this country they must live on fees from private patients. He agreed with the objections emphasised by the chairman of the council; it was, however, for the profession to decide, and the time for a referendum was not yet, because the terms were still unknown.

Dr. W. S. MACDONALD (Leeds) suggested that both the Minister and the profession wanted progress; he did not see why it was impossible for them to play in the same team, and he did not understand the difficulty of the Negotiating Committee in meeting the Minister. Opposition to the Bill was not going to do any credit to the profession, which was bound hand and foot to a tradition more enslaving than any imposed by a Government department. On April 1, 1948, people might aptly point to the profession and exclaim: "these are the fools that said in May and again in July, 1946, that they would have nothing to do with the Bill." The profession should negotiate with the Minister.

Mr. C. E. BEARE (Reigate) said that there was no question of flouting the law; the profession simply had to decide whether it would come in or stay out of the service. The Minister would be dragging in men as soon as the Bill was enacted, when he would be setting up regional boards; the referendum was a matter of urgency.

Dr. J. A. BROWN (Birmingham) sought to correct any misconstruction of Dr. Dain's speech: the association's action was, he said, unconnected with political opinions.

Dr. H. S. PASMORE (Kensington and Hammersmith) called for leadership and a simple explanation of the issues to the profession. Mr. R. SCOTT STEVENSON (Gibraltar) asked for an immediate and simple referendum, on the result of which the council should act. Dr. E. A. GREGG (St. Pancras) contended that negotiation of regulations would mean that the profession had started to work the Act; this was the moment for decision.

Dr. DAIN said it had been wrong to negotiate the sum for compensation while objecting to the principle. It would be fatal now to discuss regulations, with reservations. Details could not be discussed without parting with principles. The Minister refused to negotiate principles, and with them a fence was being created within which doctors would have to work. The association should take no hand in setting up regional boards until the Minister had conceded the principles.

Dr. E. W. GOODWIN (Leicestershire and Rutland) put a motion recommending a referendum to each consultant and general practitioner when the time was opportune. This, he said, should be put as soon as the Bill was seen in its final form; and there should be 75% accord before refusal to work the terms of the Bill was considered.

Dr. A. BROWN (Cambridge and Huntingdon) put an amendment calling for an immediate referendum on whether negotiations should be undertaken on regulations. A second referendum could be held later to decide whether the service was to be operated. Other speakers called for two referendums, the first of which should be held at once.

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Dr. A. G. HOLMAN (East Norfolk) had grave misgivings as to the success of a referendum. In 1911 he had attended a meeting at which it had been decided almost unanimously that no part would be taken in the National Health Insurance scheme. Subsequently, he found that three-quarters of those present had already agreed, or else agreed almost immediately afterwards, to join the scheme. There was need for a mechanism which would ensure that doctors would stick to their recorded opinions. Dr. S. LAURIE SMITH (Blackpool and Fylde) was opposed to dividing the referendum; the association should wait and first learn how doctors were going to be paid and compensated.

Dr. TALBOT ROGERS (Bromley) suggested that no plebiscite should be held till it was seen what questions it should put. The response now would be emotional and changeable. He did not agree that little improvement to the Bill had been gained in the committee stage; among important improvements were the modification of the penal clauses and the granting to those remaining in practice of a voice in the selection of their colleagues. Regulations might be similarly modified by negotiation. The decision to hold a referendum on whether or not regulations were to be negotiated should be deferred until a special representative meeting, which should be called as soon as possible.

Other speakers supported the idea of a referendum, though opinions differed on the desirable time and scope. Dr. DAIN suggested that the timing should be left to the council; it should be held in the reasonably near future. In the meantime, those asked to help in framing regulations should reply that they could not do so until the result was known.

Dr. BROWN agreed to change his amendment so that it called for a referendum not immediately but in the near future. The amendment was carried.

Mr. LAWRENCE ABEL (Marylebone) refused to accept the amended motion as it stood; the council should, according to his rider, consider including in the plebiscite contact with each member of the profession. "Who comes to the meetings? The successful doctor, the keen doctor, and the busy doctor—like you and me"; and he added, "let's give the N.H.I. the go-by for a year or a year and a half."

The sense of the resolution, as it was finally passed, was that a referendum on the desirability of negotiating regulations should be taken soon; and that the meeting thought the council ought to consider including in it personal contact with the profession.

Standing orders were later suspended to allow the meeting to consider a motion that no registered medical practitioner should accept membership of any committee or board established under the National Health Service Act until the result of the forthcoming plebiscite was known. This was carried unanimously.

ALTERNATIVE METHODS OF PRACTICE

In answer to a questioning motion which sought to elucidate the form of practice contemplated by the association if the Bill should prove unacceptable, Dr. DAIN said that a number of different schemes had been considered without unanimity being reached. What would happen would be that, in areas with public medical services, these services would continue to operate; otherwise the ordinary methods of private practice would be pursued.

NURSING-HOMES

Dr. O. C. CARTER (Bournemouth) put forward a motion calling for the preservation of the private nursing-home. This was supported by Mr. A. DICKSON WRIGHT (Marylebone), who considered that the competition of the private nursing-home would be a valuable corrective to the Minister. The motion was carried.

COMPENSATION

Dr. A. C. E. BREACH (Bromley) moved that in the event of goodwill of practices being acquired by the State and of compensation being paid, the practices of those doctors who were killed or disabled by enemy action during the war should rank for compensation on the basis of the 1939 income in those cases where the goodwill had not already been sold. The practices described in the motion had, he said, been dissolved among other doctors. The motion was carried.

GENERAL PRACTICE

Dr. C. MACKIE (Worcester and Bromsgrove) moved an amendment to the principles designed to safeguard general practice under a 100% service, to provide that a practitioner might be free to conduct private practice at a health centre or elsewhere at his own discretion. How were busy doctors, he asked, to find time for double surgery duties at health centres and at private surgeries? They would have to pay rent for consulting-rooms at both health centres and their own consulting-rooms; and this might discourage younger men from practising privately. It should, he suggested, be possible to see private and public patients at health centres. Dr. S. WAND agreed that when the health centres were established they would have the advantage of good equipment; but it was difficult to see how the proposed course could be effected with a 100% National Health Service. The amendment was referred to council.

A Hendon amendment that patients who elect to obtain medical advice privately should not be required to pay for drugs and appliances was carried, as was a motion from Kensington that the council should give urgent consideration to the methods by which private practice might be maintained in the future. The meeting reaffirmed the decision reached at the special representative meeting that it was essential that financial and administrative arrangements should not penalise the doctor or patient that chose to remain outside the service; and the amended paragraph was approved.

SPECIAL PRACTICE

The discussion of the council's report on special practice was largely concerned with the future status of the part-time consultant and specialist. Dr. H. S. HOWIE WOOD (Isle of Wight), seeking an assurance that the council was mindful of these doctors' needs, said that he and many others were anxious about their practices and their hospital work when the National Health Service came into operation. Dr. DAIN pointed out that part-time consultants were being made members of the consultants' and specialists' committee. Nothing definite was known of the future, since the part-time consultant's status would be decided by regulation. Dr. HOWIE WOOD replied that there was apprehension that part-time consultants might become either full-time consultants or full-time general practitioners.

Dr. W. D. STEEL (Worcester and Bromsgrove) argued that, while there should be freedom of choice of consultants within prescribed limits, there should be for ambulant or movable patients complete freedom of choice of consultant. Dr. G. P. WILLIAMS (Caernarvonshire and Anglesey) said that North Wales had much to fear from regionalisation; it might be cut off from Liverpool before it could provide a good independent service. The Minister had recently promised a solution which he claimed would find "universal approval"; but its terms were unknown. Dr. R. G. GORDON (Bath), on behalf of spa doctors, also supported the amendment, which was carried.

THE OPEN DOOR

Dr. H. M. BIRD (West Suffolk) moved that the principle of the "open door" for pathology, radiology,

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and physiotherapy services should be adopted. It had been practised successfully in his area for the past 25 years. Giving practitioners direct access to these departments spared consultants, saved patients' time, and enabled practitioners to treat their patients intelligently. Dr. TALBOT ROGERS said that any other system was degrading for practitioners and specialists alike. In Kent, where a pathology service had been freely available for the past 15 years, it had been found that the doctor either knew exactly what he wanted or, if not, he did not send the patient for examination. The service had not been misused. Dr. W. GUNN (Greenwich and Deptford) considered that the adoption of the open-door policy would lead to the inundation of departments by applications for tests, so that reports might have to be made by technicians; the practitioner could undoubtedly interpret reports, but, under these conditions, he might not even be given the true facts. Other speakers opposed this view, and all who had had personal experience agreed that the system had worked well. Dr. R. O. EADES (East Suffolk) said that practitioners were at a division; if they were not given the instruments they would become simply signers of certificates and of *rep. mist.* forms. The principle underlying the motion was important.

The motion was carried.

NATIONAL MATERNITY SERVICE

Dr. R. FORBES (Hendon) called for opposition to the introduction of new criteria of qualification sponsored by the Royal College of Obstetricians or the Ministry of Health which would preclude competent general practitioners from engaging in midwifery among public or private patients. Dr. G. PRIESTMAN (Bradford) agreed, and added that criticism of the general practitioner's ability might be met by better liaison between the practitioner and the obstetric specialist; and in the general-practitioner hospital maternity beds should be set aside where the practitioner could do midwifery in collaboration with a specialist. The amendment was carried. The meeting agreed to a Greenwich amendment that in the future health service any general practitioner who desired to undertake obstetrics should undertake to remain efficient in midwifery. The representatives also supported a North Staffordshire motion that the minimum fee for attending a full confinement under local-authority arrangements should be five guineas.

Spens Report and Capitation Fee

Dr. J. A. BROWN claimed that it had been necessary to recommend additional remuneration in unattractive areas only because of the miserable capitation fees. If sufficient capitation fees were paid, plus some additional remuneration for service in these areas, direction (negative or positive) would not be necessary. The Spens Committee had shown awareness of the need to attract men into general practice by good pay. Unless action to this end was taken, the medical service might find itself in the predicament in which the nursing profession now stood.

Dr. E. A. GREGG, chairman of the Insurance Acts Committee, announced that a further application had been made to the Ministry for an advance in the capitation fee. The Minister had sought to associate, in discussions with the committee's representatives, the question of capitation fees under the N.H.I. with payment of general practitioners in any future service. The delegation had replied that it was not within its province to embark on discussions of that character; the Minister was told that the profession had already given definite views on remuneration and especially on the question of basic salary. The suggested discussion could not be held until the profession's authority had been granted; the delegation's dissatisfaction had been firmly registered. At a second visit to the Ministry, officials had repeated the invitation to discuss these problems jointly; the delegation had again refused, and had suggested that the implications of the Spens report should be applied immediately. At a third interview, the delegation had been told that the Minister suggested an advance of 2*s.* in the capitation fee, and the following letter from the secretary to the Ministry had been received by the secretary of the association.

Dear Dr. HILL,

The Minister has asked me to refer to the recent meetings between his officers and representatives of the profession and in particular to the meeting held on Wednesday last with representatives of the Insurance Acts Committee about the remuneration of doctors within the National Health Insurance scheme during the period before the proposed National Health Service comes into operation.

The principal factor in any consideration of this question and of the question of remuneration in the future health service is the report of the Spens Committee on the Remuneration of General Practitioners. The Minister desires to make his attitude to that report quite clear. He fully accepts the substance of the recommendations of the committee in their majority report upon the general scope and range of remuneration which general practitioners should enjoy in a public service. The actual terms of remuneration cannot, however, be calculated from the recommendations by a simple process of arithmetic; the calculation involves consideration of a number of factors (e.g., the effect of a superannuation scheme and the percentage of betterment to be applied to pre-war figures) which are matters for discussion.

The Minister is consequently of opinion that the translation of the Spens recommendations into actual terms of remuneration—whether for the new health service or for the present health insurance scheme—is a matter which must be discussed with the profession. Moreover, in his view, it must be discussed as a whole; it is impossible to divorce the question of the current capitation rate from that of remuneration under the new health service since some of the problems to be examined affect both questions. He learnt, therefore, with regret of the feeling among your representatives that they are not authorised to discuss the terms of remuneration in the future health service now. He would have assumed that they could do so expressly without prejudice to the profession's subsequent general attitude to the National Health Service proposals—just as other representatives of the profession recently discussed the question of amounts of compensation without prejudice to the future attitude of the profession to the proposal to abolish the sale of practices in the public service. He still trusts that on further consideration your representatives will be willing to take part in the wider discussions which he for his part is prepared to begin at once.

If, however, the profession's representatives adhere to the view that they cannot do this, the Minister is left with no alternative but to defer discussion. In the meantime, he is prepared to increase the current capitation rate by an amount which appears to him to be reasonable. He therefore proposes to raise the present capitation fee to 12*s.* 6*d.* and in addition to regard this rate as having been operative since Jan. 1, 1946.

Ministry of Health, July 22. WM. S. DOUGLAS.

The I.A.C., Dr. Gregg continued, had considered the letter, and in its reply to the Minister had embodied two points: (1) the proposed increase of 2*s.* in the capitation fee was gravely inadequate; and (2) the committee would be prepared to recommend to insurance practitioners that they should accept an interim capitation fee of 15*s.* to operate retrospectively from Jan. 1. The committee would also be willing that the Spens Committee or its personnel should be asked to express their views on the implications of their report in relation to current capitation fees, provided that both the I.A.C. and the Minister accepted their findings in advance.

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The meeting expressed unanimous approval of the I.A.C.'s action, and deferred further discussion of the subject.

Coroners and Post-mortems

Dr. R. FORBES (Hendon), who proposed that the council should be invited to review the working of the Coroners' Acts, said that amendments should be made to render the relationship between practitioner and coroner more happy. The office of coroner carried serious duties; doctors and other members of the public had had dreadful experiences; the duty of coroners should be restricted to finding the cause of death, and they should be prohibited from making adverse criticism, often irrelevant, of practitioners. Many doctors were asked for reports for which they were inadequately paid or unpaid. Moreover, necropsies were frequently undertaken without the practitioner who might be concerned being informed. Better facilities should be given to pathologists, and the fees they received should be improved, as should the fees for medical evidence in the coroner's court.

Dr. D. M. THOMPSON (Dartford) said that practitioners should have the right to do necropsies. Dr. W. B. A. LEWIS (Shropshire), speaking as a part-time coroner, reported that the Coroners' Society was examining the question of improving the standard of pathology at necropsies. The coroner, he said, must be free to employ anyone he chose. It was ridiculous to expect that this specialised work should be competently undertaken by the general practitioner. An inquiry into the coroner's powers was an enormous task; there had been such an inquiry in 1936, but no new legislation had resulted.

Dr. Forbes's motion was carried.

Dr. I. G. INNES (East Yorks) moved that the decision as to who was competent to perform necropsies should not rest with the coroner. Necropsies, he said, should be performed only by a properly trained pathologist or by a man holding a certificate of competence. Dr. LEWIS agreed that the proper person was a qualified pathologist and added that the place for the necropsy should be well equipped. In some places now used for post-mortems "it would be indecent to do an autopsy on a deceased cow." Dr. FORBES asked who, if not the coroner, was to decide. Coroners stood between practitioners and the public, and they were the most appropriate persons to make an impartial selection. The meeting proceeded to the next business.

Other Business

MILK

A discussion on the provision of pure milk revealed unanimous opinion that the Government should be prompted to provide clean milk; but the wording of the motion was delayed by protracted negotiations, which were enlivened by some propaganda jingle, based on nursery rhymes, from Mr. LAWRENCE ABEL. Finally, Dr. CHARLES HILL, the secretary, composed, and Dr. DAIN read, a motion urging that ideally all milk should be obtained from disease-free herds under the best hygienic conditions; that in the meantime all milk should be pasteurised, or, where efficient pasteurisation was not available, should be boiled; and that this should be emphasised immediately to the Minister of Health as a matter of urgent national importance. Authority's happy intervention was greeted with acclamation.

THE CHRONIC SICK

The representatives were sympathetic to the needs, which they agreed had been neglected, of the old and infirm, especially of those who were unable to care for themselves yet did not require to go to hospital. The solution, it was suggested, might lie in general-practitioner hospitals and in home helps. It was agreed that the problem was urgent; and more than one speaker mentioned examples of old people who, though not previously ill, had died within a week or two of admission to the institutions that were now provided for them. Dr. ALICE GILBY pressed for domestic help and the provision of meals to this group; and Dr. ELSIE WARREN suggested that priority should be given to the chronic sick in blocks of flats near hospitals and health centres. A motion calling on the council to set up a committee to investigate the whole position was carried.

PART-TIME SERVICE

The new scales of pay recommended by the council for part-time employment by local authorities were discussed and approved. The interim revision of the Askwith scales was considered; representatives agreed that the outcome, especially for senior officers, had been unsatisfactory, but a motion expressing dissatisfaction with the methods and result of the negotiations was lost.

LECTURES AND CONFERENCES

Dr. DAIN announced that it had been decided to set aside £1000 for the purpose of sending British medical lecturers to speak in other countries, and that an international conference was to be held in London in a few weeks' time from Sept. 25 to 27.

Annual Meeting

At the annual meeting of the association held on July 24 Sir HUGH LETT was inducted as president for 1946–47. In a short address he commended the increasing coöperation between the Royal Colleges and the Association, which, he said, must please all those who looked ahead. The formation, in 1940, of a joint council—the Medical Planning Commission—had been a historic step. Hitherto, the profession had been free from bureaucracy and the ebb and flow of politics; and clinical freedom must be preserved. "Medicine," he added, "is not as simple as building houses."

The Stewart prize was presented to Prof. Major Greenwood, F.R.S., and Dr. W. N. Pickles.

RED CROSS

THE INTERNATIONAL CONFERENCE

AN international conference of the League of Red Cross Societies, held at Oxford from July 8 to 20, was attended by representatives of nearly 60 nations, including many distinguished members of the medical profession from the United States, the Dominions, the South American Republics, and various Continental countries. As this was the first conference since the war, a great deal of time was necessarily spent in discussing constitutional matters arising out of war-time experience, including the condemnation of indiscriminate means of attacking or enslaving civilian populations. The relationship of the League of Red Cross Societies, which is an association of all national Red Cross or Red Crescent organisations, to the International Red Cross Committee, which is a neutral body exclusively composed of Swiss citizens, also came under review.

One of the largest and most important committees set up by the conference, the advisory health committee, had before it a wide and somewhat ambitious programme, including such subjects as health propaganda, the improvement of first-aid training, the development of campaigns for extending the knowledge of nutritional principles and balanced diets, and the part which Red Cross members can play in connexion with the reablement of the disabled, the aftercare of the tuberculous, the provision of blood for transfusion services, and the establishment of centres for the treatment, under medical supervision, of the rheumatic disorders.

Much attention was paid to the valuable service which can be rendered by an organisation such as the Red Cross in recruiting voluntary assistants and donors for the maintenance of efficient blood-transfusion centres. With the close of the war, and the loss of the former sense of urgency, there is a natural tendency for donors to slacken off, but the increasing use of blood and blood-products, both for prophylaxis and for therapy, makes it imperative

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that this tendency should be checked. The Red Cross societies are peculiarly suited to undertake this task. In this connexion the committee also drew attention to the confusion which often results from the use of different coloured cards, in different countries, for donors of particular blood-groups, and urged the adoption of a uniform system.

The necessity of revising first-aid training so as to meet the new types of emergency resulting from modern methods of warfare was emphasised by many delegates, and the interesting suggestion was made that the league should consider the possibility of establishing an international first-aid certificate for those who passed the necessary tests.

The possibility of utilising the services of Red Cross members in reablement and in the aftercare of the tuberculous attracted great interest. It was felt that there is a big range of useful activities which could be undertaken by the Red Cross in helping to provide comforts and diversionary handicrafts for the homebound and for long-stay patients in hospitals and sanatoria, in assisting nurses, occupational therapists, and health visitors in the discharge of their skilled work on behalf of such patients, and possibly in taking a share in staffing reablement centres and tuberculosis colonies. A full report on this subject is to be prepared, and a memorandum published on the various forms of service which Red Cross members could render. During the conference special visits were paid to the reablement departments associated with the Wingfield-Morris Orthopædic Hospital, the Ripon Hall Annexe for Peripheral Nerve Injuries, and the Papworth Tuberculosis Colony, and films were shown illustrating work done in Royal Air Force centres and at Roehampton. Delegates from most countries were unfamiliar with the developments which have taken place in this direction. Other interesting visits were also paid to the British Red Cross Rheumatism Clinic and to a blood-transfusion depot.

Throughout the conference reference was repeatedly made to the need for better interchange of information on such subjects as the prevention and treatment of infectious disorders, the treatment of serious accidents, and the combating of shock. A meeting of experts in First Aid and Traumatic Surgery is to be convened in 1947 or 1948, and the possibility of holding a conference on Infectious Diseases, and of establishing an *International Health Review*, was submitted to the league secretariat for further study.

UROLOGICAL SURVEY OF BRITAIN

THE British Association of Urological Surgeons has issued a statement of the principles which should govern the distribution and organisation of the national urological service which must be an essential part of the new National Health Service scheme. The statement is confined to a short general outline of the problem; but the association has access to further information, and is prepared to coöperate fully with the Ministry through the Royal College of Surgeons in examining details and in making specific recommendations.

PRINCIPLES

Three main points are made at the outset: (1) that urology is a highly developed, and from the point of view of equipment an expensive, specialty; (2) that specially trained nurses are needed both before and after operation; and (3) that a considerable proportion of urological patients first seek medical assistance because of urgent conditions. It follows therefore that urological departments cannot be provided in every hospital and must be limited to large central hospitals; but the staffs of certain smaller hospitals must include surgeons competent to render the correct immediate treatment for urgent cases and to decide when it is necessary to transfer patients to a fully equipped and fully staffed urological department. The policy should be to bring the patient to the specialist and not the specialist to the patient. At the same time it is not thought possible or desirable that all cases of genito-urinary diseases should be under the direct control of urologists: their aim should be to raise the standard of urological surgery and to be available for consultation.

In applying these principles to general recommendations for the number and distribution of urological departments, the association has encountered a common difficulty—namely, the confusion of terms to distinguish the different grades of hospitals. It divides all hospitals into four grades: (1) the university centre (containing a medical school); (2) area group hospitals; (3) area hospitals; and (4) sub-area hospitals (which include all smaller institutions). One or more urological departments should be included in every university centre, and one in certain of the area group hospitals. "Each area hospital should contain the necessary equipment and be able to obtain the services of surgeons competent (*a*) to deal with urological emergencies, (*b*) to carry out the preliminary investigations necessary for initial diagnosis of urological disease, thereby ensuring that suitable cases receive specialised treatment and avoiding unnecessary transfer of cases which do not require it, (*c*) to undertake routine treatment when conditions are favourable." In remote districts certain sub-area hospitals should have similar facilities.

DEPARTMENTAL STAFFS

The training of surgeons and nurses in urology will mainly be concentrated in the university centre; it may also be undertaken in any urological department, but not elsewhere. A urologist should have received training, and gained experience, in general surgery, and should hold a higher qualification in surgery. It is not essential that he should be engaged solely in urology. This attitude of refusal to regard urology as a narrow and exclusive specialty is further reflected in a recommendation that the general practitioner who has referred a patient to a special clinic should be encouraged to follow closely his subsequent progress. A doctor cannot retain interest in a subject of which he has little knowledge; and ignorance may lead to a fatal error in early diagnosis.

The staff of a department should be headed by a chief urologist who, in certain university centres, should be appointed to a chair (but not necessarily on a whole-time basis). He should be available for consultation not only with colleagues in the hospital containing his department but in associated special and general hospitals and sanatoria throughout his region. There should be a staff of assistants, anæsthetists, and specially trained male and female nurses; and a physician interested in urological diseases should be associated with the department. Good pathological and radiological services and a follow-up department are also essential. Research should be mainly concentrated in the university centres.

In those hospitals where a limited amount of urology is done but in which there is not a complete department, there would be an assistant urologist who might be seconded for a period from the staff of a university centre. At non-urological hospitals in remote districts special outpatient sessions might be arranged for which a visiting urologist would attend.

Emphasis is laid on the need for accommodation and nursing by the many elderly patients who are disabled by urological disease and who require protracted attention and supervision. It is unnecessary for most of these to be retained continuously in urological departments, and they should be accommodated elsewhere.

INFECTIOUS DISEASE IN ENGLAND AND WALES

WEEK ENDED JULY 20

Notifications.—Smallpox, 0; scarlet fever, 936; whooping-cough, 2474; diphtheria, 247; paratyphoid, 20; typhoid, 6; measles (excluding rubella), 3783; pneumonia (primary or influenzal), 380; cerebrospinal fever, 49; poliomyelitis, 10; polio-encephalitis, 1; encephalitis lethargica, 1; dysentery, 60; puerperal pyrexia, 133; ophthalmia neonatorum, 66. No case of cholera or typhus was notified during the week.

Deaths.—In 126 great towns there were no deaths from enteric fever or scarlet fever, 3 (0) from measles, 4 (1) from whooping-cough, 1 (0) from diphtheria, 36 (2) from diarrhœa and enteritis under two years, and 2 (0) from influenza. The figures in parentheses are those for London itself.

Liverpool reported 11 deaths from diarrhœa and enteritis.

The number of stillbirths notified during the week was 241 (corresponding to a rate of 26 per thousand total births), including 31 in London.

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In England Now

A Running Commentary by Peripatetic Correspondents

OUR forefathers were content to die after a glimpse of Naples. But, owing to the recent association of that once proud city with rats, typhus, and Fascism, we must look for a substitute for our successors. I have never seen Naples—nor do I wish to—but looking back I realise how great would have been my loss had I passed over without the memory of my stay in Java, especially Batavia. A year here, and a week stolen in Bali, have convinced me that the apparently soulless designation "SEAC" embraces a world of its own. Perhaps the unusual circumstances of our arrival contributed much, our field ambulance with the 1st Bn. Seaforth being the first troops to enter Java after the Rising Sun was set.

We found Batavia a beautiful city of wide boulevards, internment camps, night-clubs, starvation, bright lights, and overflowing shops. And the girls . . . after a year in Nasik, Deolali, and Bombay it was like the promised land, or maybe Hollywood. Then came trouble. No-one quite knew how it started, but the boulevards became dirty, the cafés closed, the lights went out, and the overflowing shops which did not empty themselves and lock up were looted. But, serene amid the turmoil, the Officers' Club organised dances, and one drove the ladies home to the camps, with the music of Stens in the ear, and with head and foot well down. One M.O., a regular supporter of the club, was rash enough to take a pot at a sniper outside one night, and was rewarded with a bullet through the liver. Later it was reported that the bullet had been partially deflected by a hobnail, and the damage was not serious.

Our field ambulance then moved to Bandoeng in the hills to the south; then back down the road via Tjiandjoer and Poentjak, the former a personification of the classical causes of typhoid, the latter as lovely as a May morning amid the blossom at home, and presided over by a volcano. Now we are back in Batavia, where after 5 months we find much is changed. The grey camouflaged buildings are a dazzling white, and order has arisen from chaos. Also there are many Dutch in uniforms.

We remember the days when our field ambulance was the only military medical unit in Batavia, and our private practice (without pay) grew alarmingly. A general with fish-poisoning, six Chinese at the end of the sick-parade, and the girl at Boxlaan who said she didn't mind if there was no chaperon. Dec. 25 found Father Christmas taking sick-parade and exhibiting tonics of sherry, port, and gin to astonished and debilitated Sepoys, while one of us tried to stitch a cut head, with corks popping out and a jeep driving round the M.I. room. Those were the days when the Jocks held Batavia in their palm, and we did our best to treat them when it got too hot to hold, and they were burnt.

So, as we prepare to move out of Java, an eventful year closes, which has shown what war can do to a country. There is a strange fascination in the sight of beauty being destroyed in the struggle for possession, and later as it rises again like a phœnix there is the urge to slink away; for those who saw the ruins and saved what they could for the future tended to become idealists, dreaming dreams of the future.

Be the outcome as it may, many a man will rouse him at the name of Java, and then, thinking better of it, hold his peace. They had their reward.

* * *

The lot of the returned consultant is an unhappy one; but that is another story. One windy day in early March I sat miserably at my desk in new and expensive consulting-rooms. The window-frames had gleamed with shining cream paint, which was a source of innocent pride. Then some prying inquisitor had found that all the window cords needed to be renewed. So I sat unhappily with back to ruined paintwork while a wizened little man noisily removed the window-frames, exposing my greying hairs to the icy blast. Like all true craftsmen he wore his cap in the house, and at first his taciturnity seemed to match my own. I forget what started the conversation. Probably it was the weather, for I recall that in this matter, too, he was a specialist, and he reviewed the vagaries of our climate for every March during the past ten years. From that we drifted to holidays; and perhaps it was that his fixity of purpose committed him to the well-worn grooves of familiar story, but from that moment he seemed set on some Gadarene course of self-revelation. I should like to think that some kindliness in my face or manner inspired him to relate the story, but truth compels the opinion that his technique was that of the Ancient Mariner, and that he marked me down for the poor fish that I am.

"I like the country," he said, "the West Country. I went to Cornwall once to see a man I 'adn't seen for forty years, and 'e wasn't a bit pleased to see me." He warmed to his subject. "'E was a clergyman, and as a matter of fact 'e was my father, though 'e wasn't married to my mother. She was the daughter of the landlady where 'e 'ad lodgings as a young man, and I was a twin but the other one died. Me mother's brother, Mr. Blank, looked after me and farmed me out. But I got to know 'oo me father was, and I made up me mind that I'd save a bit of money and go down and see 'im one day. Isn't it natural that a son would want to see 'is father? Of course 'e was married then and 'ad two grown-up sons, both of 'em in the Army and in a good position—where I might 'ave been if I'd 'ad me rights. It was Easter weekend and I stayed in the village asking a few questions and making sure I was on the right track. It was 'im right enough, and 'e was the vicar and well-respected in those parts. I goes to his church on Good Friday and spots 'im orf. And on Sunday afternoon when 'e's walking from the church to the vicarage, I walks up to 'im and says, 'Good afternoon.' 'Good afternoon,' says 'e. 'Do you know Mr. Blank?' says I. 'Of course I do, I know 'im well,' 'e says, very friendly. 'Then you know me, because I'm your eldest son.' 'E went deathly white and I thought 'e would 'ave dropped, but 'e recovers himself quickly and shakes me 'and and says 'e is pleased to see me. 'I'd like to talk to you,' I says. 'Come tomorrow,' he says; 'come and see me at 3 o'clock.' I was a bit early next day and 'e seemed put out; but we settled down to talk for a bit, when in came another chap 'oo said he was a solicitor, and me father left the room. 'What do you want?' this man says. 'Is it money?' 'All I want is me rights,' I says. 'E did 'is best to get me to take money, but I wouldn't 'ave it. Nice way for a father to treat 'is eldest son—trying to get something on 'im for blackmail. After some more talk of the kind I went off, and soon after I went back 'ome to London. But I made up me mind that I wouldn't leave the matter there. 'E died two years ago and I wrote to 'is widow and asked where 'e was buried. Isn't it natural that a son should want to know where 'is father was buried?"

By this time the cords were fixed and the window was replaced, to my added comfort, but the story flowed on. "All I got was a letter from the solicitor threatening me with the law if I wrote again. But I 'aven't finished with 'em. I kept that letter, and I get the local paper every week to find out what me brothers are doing and 'ow they're getting on. All me father ever spent on me was eight shillings a week, and then 'e was behind with 'is payments twice. I know because 'e wrote letters and me foster-mother gave 'em to me; and that is 'ow I knew 'oo 'e was." He shook his head slowly and sadly. "The trouble is that the law of the country is agin people like me."

The last chip was knocked off the paint; the last thumb-mark imprinted on the frame. The little man gathered up his tools—"Good-day," said he, and went out of my life, to find another Wedding Guest for his story and his bitterness.

* * *

I suppose every hospital staff-room is used to badinage between the various departments. Though this may date back to the times when the feuds between the physicians and the barber surgeons were really serious, today the chaff, even if occasionally heavy handed, leaves no sting behind, and, like the tale told by Shakespeare's idiot, signifies nothing. So perhaps it is as well that it was left to the expert who sets the *Times* crossword puzzles to discover that "psychologist" is an anagram of "pigsty school." Comment is superfluous and might be dangerous.

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Parliament

ON THE FLOOR OF THE HOUSE

THE first year of the Labour Government is ending, and we are gradually getting, nationally and internationally, into a peace perspective. The Budget is approaching a balance, policy on the future of the Defence Forces is being worked out in detail, and the peace conferences have opened in Paris.

Our expenditure this year is estimated at £3887 million (last year £5565 million) and the reduction is in Defence expenditure. When the peace treaties have been signed, our responsibilities will diminish further; but we still have them in India, in the Middle East, and (as Lord Nathan has been reminding the House of Lords) over the length and breadth of world-wide communications. It is clear that we shall still have to face expenditure on a high scale in connexion with the Commonwealth and Empire and with our peace-keeping functions on behalf of the United Nations. If the 1914–18 war was a chemists' war, and the 1939–45 war a physicists' war, a future war might well be a biologists' war, judging by the hints of disease warfare and radioactive warfare (apart of course from the atom bomb) coming out of the United States. Conceptions of strategy may have to be revolutionised, and it is to be hoped that general staffs will advise their governments that war must be outlawed if the races and nations now regarded as civilised are to survive. The United Nations organisation *must* succeed. The problem of peace is being viewed through the haze of an atom-bomb dust-cloud and perhaps seen all the more clearly because of that.

In the House of Commons we have devoted two days to the report stage of the National Health Service Bill and one day to its third reading. The Bill in its final House of Commons' form is passed to the House of Lords and is unlikely to be much changed before it goes for the Royal Assent. The appointed day for the inception of the National Health Act is now expected to be April 1, 1948, and it will have to be brought into relation with the National Insurance Bill which passed through its House of Lords' stage also last week.

Mr. Aneurin Bevan received, from his own side and from the Conservative opposition, many tributes of admiration before the final vote was taken. For the Opposition decided to put down a "reasoned amendment" to the third reading so that they could say all they wanted to in praise or criticism—and the doses were fairly mixed—and yet register their antagonism to certain of the Bill's principles. For the most part those who opposed the Bill looked back to the past, and those who supported it looked forward to the future. The old ways have gone; but it was impossible to keep them wholly, as the Hospital Surveys made plain, quite apart from declarations by Coalition Ministers of Health from Brown to Willink. The new ways have not come yet and will need much hard work in preparation. The Minister's appeal to the medical profession for coöperation in making the National Health Service fully and truly successful was an obviously sincere one. Medical opinion in the House, and the opinion of those most closely in touch with medical and hospital administration, is that this coöperation will be forthcoming.

MEDICUS, M.P.

Wing-Commander N. J. HULBERT asked the Minister of Food if he would consider granting doctors in country districts an extra allowance of bread to compensate for the difficulties they experienced in obtaining meals at regular hours.—Dr. E. SUMMERSKILL replied: The Minister regrets that he is unable to adopt this suggestion.

NATIONAL HEALTH SERVICE BILL

THE THIRD READING

IN moving the third reading Mr. C. W. KEY described the National Health Service Bill as the major Bill of the session, for it attacked one of the greatest social problems of our day—the care of the sick and halt, the maimed and injured members of the community. By other means the Government were engaged in raising standards of nutrition, housing, clothing, and education to improve the health of the people, but it would unfortunately always be necessary to give early and adequate attention to the onset of disease, the result of accidents, and the effects of increasing age.

No major change had been made in the Bill, he continued, since the second reading. The tripartite character of the services remained, and the machinery for their provision and administration was the same. But minor amendments had been made, and in its present form the Bill was better than it was. Some would still regret this or the other provision or omission, but democracy meant not only that the will of the majority must prevail but that when the set-up of the services was settled it was the duty of all to coöperate in making the scheme a success. It might possibly take a little time to get into the right state of mind to operate the Bill, but Mr. Key was convinced that the doctors and doctored, hospital governors and municipal councils, Ministry representatives and health-service workers would all come together to work out the details of this great service.

THE AMENDMENT

The amendment tabled by the Opposition that

This House, while welcoming a comprehensive Health Service, declines to give a Third Reading to a Bill which discourages voluntary effort and association; mutilates the structure of local government; dangerously increases Ministerial power and patronage; appropriates trust funds and benefactions in contempt of the wishes of donors and subscribers; and undermines the freedom and independence of the medical profession to the detriment of the nation

Mr. Key described as five inexcusable inexactitudes. The Bill did not discourage voluntary effort. By regional boards, management committees, and house committees it widened the opportunity for voluntary services in the control of hospitals. By extending to boards and management committees the power to accept gifts and hold endowments it encouraged local effort, and by guaranteeing the maintenance of the institutions it set free voluntary contributions for the improvement of the amenities and personal comfort of the patients. But it did discourage the unsocial belief that the provision of essential services for the common people should depend on the chance results of charitable appeals.

Nor did the Bill mutilate the structure of local government. It made no change save that where experience showed that this would be beneficial it made possible the combination of health authorities under general boards consisting of their representatives. In the interests of administration it had been necessary to transfer some powers from one authority to another, but provision had been made for members of the authority from which the powers had been transferred to participate in their future performance by the new body. New powers and duties had also been given to the local authorities.

The Bill was also charged with dangerously increasing Ministerial power and patronage. But every increase in the functions of the publicly elected representatives of the people was dangerous to the private interests of the privileged classes represented on the benches opposite. So long as largely self-appointed administrators of charitable institutions were left in charge, not only of the voluntary funds but also of considerable contributions from national funds, all was well, but as soon as the people through their elected agents determined to manage the services for themselves the situation became dangerous. He was happy in the knowledge that this danger was destined to grow. All appointments to the bodies that would carry out the Minister's powers were to be exercised after consultation with the organisations concerned, and it was obvious to any unprejudiced person that they would not rest on the mere *ipse dixit* of the Minister. The regional boards and the hospital management

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committees would appoint and employ practically all the hospital staff. In the general-practitioner service the Minister had control to a negative extent over the distribution of doctors through the Medical Practices Committee. But this was no new power, but one which had been enjoyed for over 30 years by ministers in relation to medical and other benefits under the National Insurance scheme.

The charge that trust funds and benefactions had been appropriated in contempt of the wishes of donors was astonishing. The funds were given for the provision of a hospital service, but surely for the benefit of the people and not institutions. Instead of offering to supplement these assets from public funds the Government, to simplify the financial administration of the service, were covering the whole of the hospitals' current expenses and capital development out of public funds. What the donors wished was being done, not with their money but with public funds, and their endowments were set free to provide extras to the normal services. Many patients who had been able to find treatment for their ills only in cottage hospitals would now get better specialised services in other institutions never before available to them. Surely the donors gave these funds not to the bricks and mortar of the cottage hospitals, but for the benefit of the patients, and it was right that the funds should follow the patients, no matter to which institution they were sent.

To say that the Bill undermined the freedom and independence of the medical profession was the perversion par excellence. Every doctor was free to enter the service or not as he chose; if he entered, he was free to take or reject patients, even free to accept private patients. But if he entered the service he must accept the essential conditions of the service. Had the freedom of the doctor in the past been undermined because he had accepted a post as medical officer of health, or a salaried appointment in a municipal or voluntary hospital? No body of public or private employees, Mr. Key declared, had ever had the freedom the medical profession would have under the Bill. The local executive council which appointed the general practitioner would consist of 50% professional members appointed not by the Minister but by the profession itself, and of the Medical Practices Committee the chairman and six out of eight members must be doctors.

Mr. H. LINSTEAD in formally moving the Opposition's amendment confessed he was fortified in doing so by Mr. Key's remarks. The Bill would provide a dull, uniform, unimaginative, and pedestrian health service. It would not remove the present lack of coördination among the health services. We should still have half a dozen Government departments reponsible for various types of health service, and local services divorced from one another, with health centres where three or four authorities would meet in the same building.

The task of the reformer should be to remedy the admitted defects of the present system while retaining its advantages, and this could be achieved by centralised planning and by localised administration, by not being afraid to trust locally elected people with the spending of public money, by using to the maximum voluntary work in administration, and by allowing the great professions to take part in the work with the minimum loss to their freedom. The present Bill was remote in practice and spirit from these concepts. Decentralisation was achieved not by using the circumstance of local growth but by uprooting the present system, gathering it into the centre, and then artificially devolving it outwards again. The least possible use was made of voluntary effort, and the maximum central control exercised over the professions, with every possible inducement to compel medical practitioners, if necessary against their better judgment, to come into the scheme.

Mr. Key had said that power was concentrated in the publicly elected representatives of the people. Was this not a curious way of describing the civil servants of the Ministry of Health? Again Mr. Key had said that all powers of nomination would be exercised by the Minister only after consultation with the appropriate organisations. But these organisations were to be selected by the Minister. The Minister had the power of the purse and of the veto over the whole development of the health service of the country. It was a quick, easy, and tidy way to produce an efficient service, but it might equally well provide a poor, dull, and rigid service. The Bill would kill the voluntary hospitals, and it would take away the whole of the hospitals from the London County Council, removing their control to new and remote regional boards. To compensate the larger local authorities for the loss of their hospitals the Bill took away from the smaller authorities the domiciliary services which ought to have their roots in their own localities. In its treatment of endowments the Bill made a serious attack upon the sanctity of contract and the right of people to dispose of their goods as they desired. It put the medical profession in chains by negative direction and the prohibition of the sale of practices. The selection of a partner now rested ultimately with an executive committee. It deprived the practitioner who stayed outside the scheme of access to hospital beds. It supplanted by means of new tribunals the professional disciplinary committees.

Remembering the emphasis laid on general practice taking place in health centres, Mr. Linstead prophesied that in a few years we should reach a goal that would be the death of a free profession—that was a salaried medical service. The Minister would deny that he had any intention of producing this, but the power resided in his hands to accomplish it. They had seen a change in the Minister's outlook as the Bill passed through committee, but that change was not reflected in the structure of the Bill. Members of the standing committee believed that Mr. Bevan would bring enthusiasm and vigour to his task, but they saw in the Bill real danger of a bottleneck in administration, and believed that it would provide a second-rate service. They recognised, however, that it was practically a fait-accompli, and the least they could do was to give the Minister their good wishes and hope that he would lighten the centralised direction and give full play to initiative, enthusiasm, and professional freedom, remembering that those were the things that had built the greatness of British medicine.

TWO MASTERS

Mr. D. ECCLES regretted that the Bill took away the doctor's single duty to his patient and substituted a double responsibility to the State and to the patient. Though a patient in the general wards of a big hospital might not even know the name of the surgeon who operated on him, he had confidence in him because he had confidence in the hospital and in the general practitioner who sent him there. The tradition of the undivided responsibility of the independent doctor to his patient had been taught to succeeding generations of medical students along with the rest of the medical curriculum, and the Minister had recognised the value of this tradition by the special and unsocial treatment which he gave to the teaching hospitals. But how could the teaching hospitals in the future instil the same sense of duty when students knew that part of their income was to be a State salary and that throughout their careers they would be affected by the favour or disfavour of the Minister or his nominees? The normal reaction of human beings was to keep one eye on the boss, and what would it profit the Minister if he set up a service only to find that doctors and nurses paid more attention to his regulations than to their patients?

Mr. Eccles admitted that our present hospital system was inadequate, but pointed out that Lord Dawson, who had diagnosed the disease as long ago as 1920, had prescribed as a remedy not the Socialist amputation performed by the totalitarian knife but the grafting of new services on the old. The Bill had a grand objective but it set up a second-rate instrument, for it put more emphasis on the control than on the character of the doctors, and paid more attention to the finances, administration, and ownership of the hospitals than to the care and recovery of the sick.

Dr. STEPHEN TAYLOR congratulated the Minister on cutting his way through existing interests to produce a workable health service. The Opposition painted a picture of commercially minded doctors and testators which he was sure was unjust. So far as he could see the only kind of voluntary effort eliminated by the Bill was the signing of one's name at the bottom of a cheque

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or the selling of flags. The need for real voluntary effort had never been greater, and if those who complained about getting rid of the voluntary hospitals wanted to help let them organise themselves and once a week do some domestic work in the linen-rooms and kitchens of the hospitals. Mr. Eccles had said that the Bill made the doctor serve two masters, but surely the doctor already had to balance his duty to the individual and to the community, and under the new organisation Dr. Taylor was sure he would continue to do so. A real danger he saw in the Bill was that it gave the doctors too much freedom, and he feared that we might impose on ourselves a medical dictatorship. The Minister had tried to combine the principles of industrial democracy with the principles of general democracy, and to get sufficient medical and lay representation on all the governing agencies of the scheme to ensure that while the doctors had their say the ultimate control would rest with the people.

FINAL SUGGESTIONS

Dr. Taylor hoped that all appointments in the new service would be publicly advertised, and that there would be a maximum of mobility among doctors, with flexible superannuation schemes. He also asked the Minister in settling the pay of doctors and other health workers to insist on adequate objective criteria, such as service, qualifications, special experience, and refresher courses, and to avoid putting the doctor in the position of having to please someone else in order to obtain extra income.

The essential difference between voluntary and municipal hospitals, Dr. Taylor suggested, was not the way they raised their money but the way they were staffed. The municipal hospitals in the past had been staffed on a hierarchical principle, with a medical superintendent at the top who had been converted from a doctor into an administrator. In the voluntary hospitals there had been a parallel structure with a few physicians or surgeons all equal and the chances of promotion had been greater. He hoped that under the new scheme we should see a development of the parallel system. Medical qualifications were not very difficult to obtain if one had money and could stay the course, and though the medical profession had many brilliant members the efficiency of the general practitioner who worked in isolation could be improved. He suggested that a special form of inspection might help in which one general practitioner was visited by another, picked out for six months to do inspectoral work, who would report to no-one except the doctor he inspected. Finally, Dr. Taylor asked the Minister for adequate secretarial help for all doctors in the service, and urged that its circulars should be written in King's English and large type.

The new service, he ended, was not a drab extension of commercialism but a glorious adventure, and he hoped that when the organisation began to exist that spirit would pervade it.

Mr. F. MESSER said that when the Bill went into committee he was under the impression that they were going into an operating-theatre where a good deal of surgical work would be performed. But the surgeon in charge did not give them much chance and did most of the operating himself, applying with outstanding success an anæsthetic to his own supporters which made a good many believe things they had opposed all their lives. Mr. Messer confessed that at the second reading he had been critical of the Bill, for he saw a danger in remoteness of control; but he had been reassured by the new powers given to the hospital management committees. People who were ill were leading an artificial life robbed of activity and the ability to come and go, and they needed special consideration. Hospital catering for instance was very important. If management committees were entirely dependent on a central authority miles away we should lack that detailed day-to-day human touch so essential to the patient.

Today, in the housing shortage, childbearing was a social as well as a medical problem, and he would like to see the local authority given the right to secure maternity accommodation for the woman who was to have a normal confinement. He also felt that the ambulance service should not be under the local health authorities but be part of the hospital service. He could not remember any other Bill which depended so much on regulations, and when we got those regulations we should see just how the measure would work.

Mrs. M. RIDEALGH regretted that arrangements for the prevention of illness, for aftercare, and for the provision of domestic help were still only permissive. Quoting an article from THE LANCET of June 29, discussing interim unemployment among doctors, she asked the Minister to use these doctors now, even if it meant sending them to under-doctored parts of the country as panel doctors. This would be a preparation for the general-practitioner part of the Bill.

SOME WARNING NOTES

Sir ERNEST GRAHAM-LITTLE thought that though there was great disinclination among doctors to accept service under the Bill they would not strike, but they might say, "We do not want to work under a State service, and we shall continue to work as we are now." To work the scheme 150,000 doctors would be needed. At present there were some 50,000 active practitioners, and he thought that not more than half of these were likely to join the service. He did not see how the Minister could obtain anything like the number of doctors who would be needed to put the Bill into operation by 1948.

Sir HENRY MORRIS-JONES, though he objected to the Bill in principle on a number of issues, appealed to the doctors of the country to try to work the scheme. When the giant octopus of the State caught hold of an industry or profession it was very cold for those who remained outside, but he hoped that in time the swing and play of democratic opinion would enable a Government to emerge which would redress many of the defects in the Bill.

Mr. SOMERVILLE HASTINGS welcomed the Bill because of its universal application. When it became law its advantages would be open to everybody without qualification or waiting period. For the first time we were to have a unified hospital system which he hoped would combine the best of the voluntary and municipal systems. Though he thought the Minister right in increasing thus far the power of the hospital management committees, he wanted to strike a warning note. The use of beds, he felt, should not be left entirely to the committees. One of the benefits of regionalisation was that beds could be used to the best advantage. Staffing conditions must be unified, and he suggested that all staff, not only doctors, should have the right to appeal from decisions of the committees to the regional boards. The boards should also have the right to influence at any rate the higher appointments. It was right that the committees should be able to spend money as they desired, but it was important that we should see that each committee used its money to the best advantage and kept all its services up to par. Bulk purchases and uniform methods of record-keeping were also questions that should not be left to the whims of individual hospitals. He commended these points to the Minister for consideration when making his regulations, so as to avoid the development of another voluntary hospital system within the great scheme he had devised.

Dr. H. B. MORGAN believed that most doctors, if they could be rid of political prejudice, would work this Bill as a great profession would be expected to. He was struck by the fact that doctors were so highly efficient in their profession that in political and sociological matters they were completely ignorant.

THE END AND THE BEGINNING

Mr. H. WILLINK hoped that a comprehensive health service would not be retarded or frustrated by the vices of the Bill. He made bold to say that, but for the difficulties which the Minister had placed upon the department and upon the local authorities by his scheme, the service could have come into operation at least nine months earlier. He also regretted the lamentable obscurity of the law with regard to mental health as it emerged from the Bill.

In committee, he thought, four substantial improvements to the Bill had been made. The position of the Central Health Services Council had been improved. Changes in its constitution had now to be brought before the House. The council must be consulted before the Minister decided not to publish

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any part of their advice. There were to be standing advisory committees on the hospital services and on blood-transfusion, in addition to those mentioned in the white-paper. The standing committees would also have power to initiate advice. The position of the hospital management committees had also been improved, and the remoteness of the Medical Practices Committee had been mitigated by the promise that in substance the doctors of the districts would make the effective decisions as to the succession to practices. Lastly the extreme hardship of the penal provisions of clause 35 had been lightened. But on the grounds of the attack on local government, on voluntary effort and association, the excessive centralisation of power in the hands of the Minister, and the dangers entailed for the medical profession, he still felt bound to vote for the amendment.

Mr. A. BEVAN said that criticism had been levelled at what was described as the excessive Ministerial power which existed in the Bill. But, if in return for a contribution a service was guaranteed, that contract could not be carried out through independent and self-motivating bodies. The instruments of the service must be the agents of the Minister. But, through the regional boards, management, and house committees the scheme provided a measure of decentralisation so that local people could have as much influence as possible over the medical and hospital services. The reason for the bitterness of the Opposition was that the Bill removed one of their chief sources of social and political patronage. The only aspect of the voluntary organisations which the scheme destroyed was that the care of the sick should depend upon the benefactions of the well-to-do. But there would be more room for voluntary service in the new scheme than at present, and voluntary work would be more efficient because it would be emancipated from financial limitations. What had been called benefactions to the hospitals in the form of covenants were often diversions of money from the Chancellor of the Exchequer to the purposes of private individuals.

He was astonished that the leaders of the doctors had now identified themselves in a spirit of partisanship with the Conservative party, for the spokesmen of some elements of the profession had now become the most reactionary politicians in Great Britain. He believed that the profession as a whole would work the scheme whole-heartedly. In a recent plebiscite they had decided by a majority in favour of the abolition of the sale of practices, and the ban was not an interference with the liberty of the doctor but a protection to him and to the patient. Why should a young doctor have to seek the help of a usurer before he could practise? Could that be called "a sense of adventure in medicine"? If we were to man the medical profession effectively we must derive our doctors from lower income groups than hitherto. Therefore it was essential that we should start them off in proper fashion.

Quoting in his turn, Mr. Bevan recalled Lord Dawson's words on a national health scheme:

> What is required to be done is that the State shall provide to the medical profession an instrument, a machine and an apparatus of health which the profession shall freely exercise without let or hindrance.

And in no part of this administration, he affirmed, did the Minister or any other authority have the slightest control over the professional conduct of the doctor. The doctors were not State servants but in contract with a body on which there was a half professional representation. Under the present scheme the doctors could only appeal to the Minister, but under the new scheme they also had the right of appeal to the tribunal. They were the most protected profession in the country.

The Bill had emerged from committee with its main structure unimpaired, but its machinery had been improved and he was grateful to the members on both sides for their help. Now we had come to the third reading, and he hoped to leave controversy behind and to get the coöperation of the medical profession and of all health workers in the country without which the scheme would fail.

"The House of Commons," he ended, "only passes Bills; but it is the men and women outside who can make them living realities. Now that we are reaching the conclusion, let me hope that the echoes of controversy will die down, and that what will reach our ears will not be the declamations of partisans but the whispers and the piteous appeals of sick people all over the country, of the weak and distressed, who are reaching out their hands to this House of Commons to give them succour and assistance in their difficulties. I believe that, eventually, it will be that small voice that will be heard, and that will be most influential, and not the raucous declamations of controversialism."

The amendment was defeated by 261 votes to 113 and the Bill read a third time and passed.

QUESTION TIME

Certificate for Patient Attending Osteopath

Mr. G. HOUSE asked the Minister of Health whether he was aware that Mrs. C. Barker, 118, Fairview Road, Penn, was refused a medical certificate by her doctor, of whose name he had been informed, on the ground that she attended an osteopath without the doctor's permission, and thereby lost benefit from her friendly society; and if he would inquire into this case and take steps to rectify injustices of this nature.—Mr. A. BEVAN replied: An insurance doctor is under no obligation to issue a medical certificate to a patient who is obtaining treatment from some other person without his consent. The payment of sickness benefit is a matter for the Minister of National Insurance, but I understand that approved societies are required to give due consideration to whatever evidence of incapacity is submitted in support of a claim to benefit.

White Flour and Bread for Invalids

Mr. K. S. DIGBY asked the Minister of Food on what grounds it had been decided that no white flour or white bread should be made available for invalids who were unable to digest bread made from supplies of flour having an extraction-rate of 90% although special provision was made for such persons during the 1914–18 war.—Mr. J. STRACHEY replied: The Food Rationing (Special Diets) Advisory Committee of the Medical Research Council advised the Ministry before the extraction-rate of flour was raised to 90% that they saw no reason for making special provision for white flour to invalids provided the extraction-rate did not exceed 90%.

Special Bread Allowance for School-children

Lieut.-Colonel G. CLIFTON-BROWN asked the Minister of Food if a special bread allowance could be made for school-children when a midday school meal was not provided.—Mr. STRACHEY replied: I regret that I cannot adopt this suggestion. The allowances for children have been fixed to meet their needs even if they do not get school meals.

Tuberculosis Patients and Priority Milk

Mr. T. DRIBERG asked the Minister of Food if he had considered the case of the working-class household at Braintree, particulars of which had been submitted to him, in which 10*s.* 6*d.* a week was paid out for priority milk for two members of the household suffering from tuberculosis; and if he would make it possible for tuberculous people to get priority milk at a cheaper rate, as in the case of babies and expectant mothers.—Mr. STRACHEY replied: I appreciate that this is a very hard case. But I do not think that the way to meet it is to extend the National Milk Scheme. Perhaps the honourable Member will consult with my Ministry and the Ministry of Health on the matter.

Mass Radiography

Replying to Mr. R. W. SORENSEN, Mr. A. BEVAN stated that in England and Wales up to Dec. 31, 1945, approximately 797,000 civilians had been examined by mass radiography, of whom 2900 were diagnosed as suffering from active tuberculous conditions. Of those requiring institutional treatment 830 had been admitted to such treatment up to Dec. 31 last, and admissions since then would have substantially increased this number. He could not give the exact figure of those who had had to be placed on the waiting-list for sanatorium beds because of the prevailing shortage of hospital staff, but unceasing efforts were being made to remedy this shortage. In answer to a further question Mr. Bevan added that he was advised that there could be no standard rule about frequency of examination. Regular survey of the same groups was obviously desirable, but present resources—which were steadily increasing—still kept us short of that ideal.

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Letters to the Editor

A BRITISH INSTITUTE OF INDUSTRIAL MEDICINE?

SIR,—No machine can be greater than the man who works it: if greater output is to be achieved, industrial manufactures must be fitted to human needs. Vague expressions of humanistic hopes are valueless: what is needed is authoritative advice translated into terms of bricks and steel, inches and pounds. For this there are two essentials—first, investigations of the problems troubling labour and management, and, secondly, the translation of the results of these investigations into everyday terms.

The Health of Munition Workers Committee and the Industrial Fatigue Research Board did great pioneer work in the 1914–18 war, when many fundamental contributions were made to our knowledge of the requirements for health in industry; the story about hours of work, rest pauses, and output is now old history. It is essential, however, to remember that industrial health is a medical problem and not to be confused with labour management. In spite of recent criticism, much of it political, British industry is on the whole up to date and quick to apply new knowledge. What is wanted is speedy and wide dissemination of information about the day-to-day practical problems of industry.

In the late war the Industrial Health Research Board sponsored a great deal of work, but the subjects selected for investigation seem limited; and there is a great gap between the acquisition of knowledge and its application to industry. This might be due to shortage of investigators or to the fact that little remains to be investigated. Neither explanation seems likely; and the annual report of the Senior Medical Inspector of Factories shows that problems are arising daily in industry. Can it be that the Medical Research Council, acting through the Industrial Health Research Board, is the wrong body to conduct research in industry?

Industry must be practical, and the Industrial Health Research Board is too far removed from contact with industry to help in the daily problems. Even industrial medical officers will testify that their contact with the Industrial Health Research Board is negligible. Moreover, the board is scarcely equipped to undertake academic research, which is the function of the newly created university departments of industrial medicine. The department for research in industrial medicine at the London Hospital, and the Psychological Laboratory, Cambridge, have done admirable work, but these are specialised units on the fringe of industrial medicine. No doubt similar units will be developed for the investigation of special subjects (for example, pneumoconiosis), and it is to be hoped that the universities will take special interest in the problems of their industrial hinterland.

Potentially, therefore, there exists tremendous capacity for research; the question is how to make this cover the whole field of industrial medicine and how to make the results quickly known to those who plan and work in industry. The outsider sees the present effort as very diffuse; there is no place and no person to whom he can go for information. A foreigner coming into this country may well wonder what we are doing in research in industrial health.

What is needed is a central focus. The National Insurance (Industrial Injuries) Bill enables the Minister for National Insurance to promote research if he so wishes; but the Coal Industry Nationalisation Act goes further and imposes a duty on the Minister of Fuel and Power "to secure the prosecution of research." Let this be the opportunity to found a British Institute of Industrial Medicine which shall be the focus for all those interested in industrial health; for the alternative seems to be the establishment of more and more separate centres administered by an ever-increasing number of authorities. The institute would have its own staff of highly skilled medical experts with experience in the hard grind of industry. It should be a coördinating but never a controlling body, and it should stimulate research but not prescribe the work of independent investigators.

Through the Medical Inspectorate of Factories and industrial medical officers the institute could keep in close contact with the daily happenings in industry; it would institute and conduct research on its own premises, for which purpose medical inspectors and industrial medical officers might be seconded to it; and, above all, it should have an information section to which doctors, managers, and trade unionists might go for assistance. Regular bulletins should be published. In spite of the many hazards of industry, no central information office is yet available. In this respect Britain lags behind other nations, especially the U.S.A., whose industrial hygiene information service, centred at Bethesda, is admirable.

Finally, the head of this institute, who must have a very wide experience of medicine and industry, should be a member or even chairman of a reorganised and revivified Industrial Health Research Board, and so link the institute with other medical research.

This is an expansive conception of research in industrial medicine; it calls for a large and modern building, well equipped and staffed by a large and highly skilled body of medical and other experts, generously paid. But, considered in relation to its importance to industry, the cost of a British Institute of Industrial Medicine would be negligible. It should not be forgotten that improved health means greater output.

G. F. KEATINGE.
Nottingham. T. A. LLOYD DAVIES.

ADRENALECTOMY FOR PROSTATIC CANCER

SIR,—It is hardly surprising that, despite the evidence in favour, adrenalectomy has not proved a satisfactory method of treating patients in whom prostatic cancer shows recrudescence after relief through castration. My comments on the question raised in your annotation of July 20—why does castration mitigate the symptoms of prostatic cancer and why is this mitigation not permanent?—are as follows.

It is now generally believed that the growth of cancer of the prostate, and even of its metastases, depends on androgens. After castration, androgens produced by the testicles are absent, and their absence stimulates the pituitary to compensatory hyperfunction—i.e., overproduction of gonadotrophic hormones. This leads to secondary enlargement of the adrenals and increased androgen production by them, accounting for the recrudescence of an androgen-sensitive prostatic cancer after its growth has been checked by castration.

In a patient already weakened by castration removal of the suprarenals is hardly a practical method of treatment, in view of the magnitude of the operation and the risks incurred. I would suggest therefore that in cases of carcinoma of the prostate one should attempt from the first to inhibit the pituitary—i.e., inhibit the production of gonadotrophic hormones which stimulate both testicles and adrenals to form androgens. This can be done by applying X rays to the pituitary gland and by giving œstrogens, with which good results have of course already been achieved.

The mode of action of œstrogens, such as stilbœstrol, is not yet certain, but they are supposed to inhibit the secretion of pituitary gonadotrophins, thus reducing the secretion of androgens by the testis and suprarenals. In animals changes in the pituitary are produced by prolonged administration of œstrogens in large dosage.

Hitchin. D. GUTMANN.

C.CM. OR MILLILITRE?

SIR,—Dr. Hamill, in his first letter (June 29), states that the volume of 1 c.cm. is not one millilitre. With this I agree. In his second letter (July 13) he indicates that if a clinician injects one or more c.cm., as measured in a syringe graduated in c.cm., he should say that he has injected the same number of millilitres, as this is "quite accurate enough for all medical purposes." With this I disagree. The physician must therefore choose between being accurate and recording that he has injected so many c.cm. and being inaccurate and pleasing Dr. Hamill. When our syringes are graduated in millilitres he will not have to make this difficult choice. In the meantime I prefer to be accurate and to call a spade a spade and not a shovel, and a c.cm. a c.cm. and not a millilitre.

London, W.1. G. E. BEAUMONT.

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UNEMPLOYMENT AMONG DOCTORS

SIR,—The Socialist member for North Ilford (Mrs. Ridealgh) in a speech (*Hansard*, July 26) on the third reading of the National Health Service Bill, read a long quotation from your annotation of June 29. She described the "unemployment that is prevalent amongst doctors" as "due to the fact that the Act does not come into force until April 1, 1948," and she quoted your article as sustaining this argument.

I would suggest that a much more obvious reason for this "unemployment" is the uncertainty of the future and the dislocation of customary methods of entering practice occasioned by the abolition of transfer of goodwill, and perhaps still more importantly, by the disinclination of so many of the younger men in the profession to undertake practice under the conditions imposed by the Bill.

In the debate in March, 1944, on the white-paper disclosing the intentions of the Coalition Government with regard to the future health services, the Parliamentary Secretary to the Minister of Health, in answer to a question "what should a doctor do who did not wish to enter the public service," replied "He could emigrate or retire." A recent inquiry at the Dominions Offices in London shows a very large number of applications from young doctors seeking to avoid the public service by adopting the first alternative suggested by the Parliamentary Secretary, by emigrating to the Dominions. When one adds that it is extremely improbable, if not absolutely impossible, that the Act will come into operation with any prospect of fulfilment in April, 1948—or I would suggest, for many years later than that date—the chaos produced by this uncertainty is indeed a serious consideration.

Mrs. Ridealgh's suggestion that the Minister "should use these doctors now, even if it means sending them to different parts of the country which are under-doctored and using them as panel doctors" affords an interesting revelation of the attitude of her party in dealing with our old and proud profession.

London, W.1. E. GRAHAM-LITTLE.

B.C.G.

SIR,—Since the completion of the memorandum which you summarised last week I have heard of a development of possible importance. As usually prepared, B.C.G. vaccine must be used within a few days, and, faced with the problem of sending it to far distant places, Russian scientists have been experimenting with methods of preserving it in the dry state for longer periods. E. N. Leschinskaya (*Amer. Rev. Soviet Med.* 1946, **3**, 210) states that freeze-drying of a bacillary suspension in 50% glucose solution yields a product which retains full viability and immunising efficacy for at least 18 months.

A major difficulty in production of B.C.G. has been that the vaccine must be used before tests for virulence, or for the presence of virulent contaminants, can be completed, which necessitates the most rigid supervision and complicated precautions at all stages of preparation. If it can be stored so that tests are complete before it is issued, the process of production can be simplified both technically and administratively, and public confidence at the same time increased. Further, preparation of large batches at long intervals, rather than frequent small batches, may make for greater uniformity of dosage, and should reduce production costs.

Preliminary experiments to test the efficacy of the Russian and of other comparable methods are under way.

Cardiff. W. H. TYTLER.

PRELIMINARY proposals for constructive legislation to reduce the nuisance of smoke have been published by the National Smoke Abatement Society, which has drafted three sets of byelaws: the first would require all fuel-burning installations, other than domestic, to receive the approval of local authorities; the second is concerned with ensuring that existing plants are maintained in good working condition and are not overloaded; and the third deals with the certification of furnacemen. The draft proposals may be obtained, price 3*d*., from the society at Chandos House, Buckingham Gate, London, S.W.1.

Obituary

ROBERT EDWARD ROBERTS

M.D., B.SC. LPOOL, F.R.C.P., F.F.R., D.P.H., D.M.R.E.

Dr. R. E. Roberts died suddenly on July 19, at the age of 56. Some three years ago he had had a warning of what might come; but he carried on, enjoying his work and his friendships with a good-humoured acceptance of the precariousness of his days.

He was educated at Birkenhead School and at the University of Liverpool. Before taking up medicine, he gained his B.SC., and then qualified M.B. in 1914, almost immediately volunteering for the Army at the outbreak of war. He served until 1918, mainly in India, and was mentioned in despatches. On his return to Liverpool, he obtained the D.P.H. in 1919 and the M.D. in 1920. For a time he worked in the department of pathology with the late E. E. Glynn. He had already started a radiological practice with his friend J. H. Mather, and it was not long before they joined forces with Charles Thurston Holland. When Holland retired, a few years later, from the Liverpool Royal Infirmary, Roberts (already assistant radiologist to the hospital) was his natural successor. Holland was the pioneer, but the reputation of the Liverpool school of radiology could not have been consolidated and enlarged without the help, in their different but complementary ways, of his two younger colleagues.

Roberts was a first-class radiologist, helpful and full of common sense when faced with a difficult problem in practice. A solid background of science and pathology, however, gave him in addition a breadth of view and an academic outlook which coloured his whole career. Like all good teachers, he enjoyed teaching: he was in his element when for an hour or two he could forget routine work and the calls of practice, and discuss films and their problems with a fortunate and fascinated group of students. His systematic postgraduate lectures on radiology, lovingly prepared, with every point clearly marshalled and beautifully illustrated, still live in the memory of those whom he has trained. Like all good teachers, he taught fundamental principles and stimulated men's minds. He enjoyed, too, the occasions when a colleague brought his clinical clerks or dressers into the X-ray department for discussion and correlation of the clinical and radiological aspects of some patient in the wards. Many a student fresh to clinical work must have learned the proper place of radiology in medicine from these encounters. He himself remained a learner all his days, and he was always eager to enlarge his experience.

He wrote with authority on many aspects of his subject, and he contributed chapters on the female genital tract, obstetrics, and tumours and cysts of bone to the *Textbook of X-ray Diagnosis*. He was consulting radiologist to various hospitals, and lecturer in radiology in the University of Liverpool, and from time to time he was invited to lecture on obstetrical radiology at the British Postgraduate School. He never sought honours, but he delighted in them when they came to him—president of the radiological section of the Royal Society of Medicine, president of the Faculty of Radiologists, vice-president of the British Institute of Radiology, examiner in radiology in the University of London, and fellow of the Royal College of Physicians. During the war he became regional adviser in radiology to the E.M.S., and he was also honorary consulting radiologist to the Army at Home. These responsibilities he undertook and fulfilled without fuss or publicity. He had a keen public sense, and on committee or in council he was generous and disinterested. He abhorred intrigue and every form of pomp or insincerity, and in his latter years he sometimes let things go by default because uncolleaguely manœuvres saddened and hurt him.

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"R. E."—Robin, to his friends—looked like a comfortable, massive countryman. His very gait was genial, and his tolerant chuckle was a joy to hear. He retained to the end a boyish zest for work and life. Until the recent war, he was a keen golfer. He enjoyed good food, good wine, good companionship, good conversation. He was happy in his home and his garden. He was sensitive and gentle, and little children loved him. He enjoyed his friends, and he gave them a rare sense of warmth in his friendship. An eminent radiologist, a grand teacher, a humble, sincere, and lovable man—it has been good to live and work with him.

He leaves his widow with two daughters, one of whom has just finished her nursing training at his own hospital.

R. C.

HECTOR ALFRED COLWELL

M.B., PH.D. LOND., M.R.C.P.

Dr. H. A. Colwell, who died on July 22 after a long illness at the age of 71, was educated at Tollington Park College, King's College, and St. Bartholomew's Hospital, where he qualified in 1900. A few years in general practice convinced him he had not found his métier, and he became pathological assistant in the cancer research laboratories of the Middlesex Hospital. To this period belongs his fruitful collaboration with Prof. Sidney Russ and Dr. R. J. Gladstone, which was interrupted in 1916 when he joined the R.A.M.C. Most of Colwell's war service was spent in Salonika as pathologist to the 36th general hospital, and his all-round medical ability, supplemented by a knowledge of practically every language spoken in that part of the world, made him a valuable officer. But dysentery was rife, and after several attacks he was invalided to Malta.

On his return to civilian life he took up radiotherapy with Dr. Robert Knox at King's College Hospital, and in 1925 succeeded him as director of the department. He served as a member of the grand council and executive committee of the British Empire Cancer Campaign, and in 1934 he was awarded the Garton gold medal and prize of that body for his essay on the biological effects and mode of action of radiations upon malignant and other cells.

"Colwell's contributions to medical literature," writes a colleague, "may well be considered his most significant work. His paper, with Gladstone, on the effect of repeated doses of X rays upon the chick embryo is still often quoted, and in 1915, when medical radiology was cutting its teeth, he published, with Russ, *Radium, X rays, and the Living Cell*, which provided those taking up the study of the new specialty with a valuable background of physical and biological fact. One of his most delightful books was an essay on the *History of Electrotherapy*, while one of his most trenchant was *X-ray and Radium Injuries*, again with Russ as joint author. He also published, with Wakeley, an *Introduction to the Study of X Rays and Radium*, and one book in purely historical vein on Gideon Harvey. Colwell always wrote with meticulous care and he put a lot of feeling into what he said about radium quackery. One of the few remaining medical scholars among us, he was a beautiful pianist and a man to whom languages presented little difficulty. His friendships were few but unbroken, and after he retired about ten years ago he enjoyed up to a point his leisure which was largely spent in his study. But the death of his wife in January of this year was a blow from which he never recovered."

DR. IZOD BENNETT

Mr. H. V. Anson writes: Your notice of Dr. T. Izod Bennett's death inspires me to make one addition from a layman who knew him very well and who admired his medical qualities from a distance but his personal qualities from near to. It was his interest in artists and their work which impressed me and many others, and in so far as this may have contributed to his wonderful estimation of men as a whole it may interest your professional readers.

In the sense that an artist's work—be it of a painter, poet, or musician, or other—is inclined to be so often unrecognised in its non-utilitarian aspect, it was Bennett who was the first to fight its battle, as he fought the battle of disease, relentlessly and fearlessly.

Many are the artists whom he has helped both medically and also in their life work. If he did not like their work he saw the possibility of admiring it. If he could neither like nor admire them or their work he was so imbued with integrity of character that he would say so in no unmeasured terms and drop the artist and his work. He hated sham but was always a true friend to sincerity and was never too knowing to refuse to learn in, to what may have been to him, an unfamiliar field.

Appointments

CHAMPION, A. H. R., M.B., D.D.SC. Melb., F.R.C.S.E., D.L.O.: visiting plastic surgeon, Duchess of York Hospital for Babies, Manchester.
CHRISTIE, A. B., M.D. Aberd., D.P.H.: medical superintendent, City Hospital, Liverpool.
CLARK, J. M. P., M.B.E., M.B. Leeds, F.R.C.S.: asst. orthopædic surgeon, General Infirmary, Leeds.
GARTSIDE, V. O. B., D.S.M., M.R.C.S.: asst. port M.O., Dover.
LANCKENAU, NELLIE, M.D. Lond.: physician i/c of physiotherapy dept., Queen Mary's Hospital for the East End, London.
LANGFORD, FRANK, M.B. Brist., F.R.C.S.: M.O.H. and school M.O., East Sussex.
MACGREGOR, I. W., M.B. Aberd.: asst. surgeon in E.N.T. dept., Worcester Royal Infirmary.
MOORE, THOMAS, M.D., M.S. Durh., F.R.C.S.: visiting surgeon, Duchess of York Hospital for Babies, Manchester.
OGILVIE, L. A., M.B. Glasg., F.R.F.P.S.: M.O., County Infirmary and Cottage Homes, Tredegar, Mon.
PAYTON, C. G., M.D. Birm., M.B. Edin., D.P.H.: M.O.H. and school M.O., Northampton.
VICKERS, A. A., M.B. Lond., D.M.R.: asst. radiologist, Worcester Royal Infirmary.

Acton Hospital: The following appointments are announced:
CRUICKSHANK, ALEXANDER, M.B. Aberd., F.R.C.S.: third consulting surgeon.
HAMBLY, E. H., M.B. Lond., F.R.C.S.: orthopædic surgeon.
HOPKINS, J. L., L.M.S.S.A., D.A.: anæsthetist.
LEWIS, J. S., M.R.C.S.: anæsthetist.
MALLEY, C. P., M.B. N.U.I., F.R.C.S.: E.N.T. surgeon.
RODGERS, R. E., M.D. Camb., M.R.C.P.: second consulting physician.

Birmingham United Hospital:
BAINES, G. H., M.B. Camb., F.R.C.S.: asst. surgeon.
COLLIS, J. L., M.D. Birm., F.R.C.S.: asst. surgeon.
D'ABREU, A. L., O.B.E., CH.M. Birm., F.R.C.S.: asst. surgeon.
DONOVAN, T. S., M.B. Birm., M.CH. ORTH. Lpool, F.R.C.S.: asst. surgeon.
HALL, G. S., M.D. Birm., M.R.C.P.: asst. physician.
INNES, ALEXANDER, M.B.E., M.B. Camb., F.R.C.S.: asst. surgeon.
MALINS, JOAN M., M.B. Birm., M.R.C.P.: asst. physician.
PARSONS, C. G., M.D. Camb., F.R.C.P.: asst. physician.
ST. JOHNSTON, C. R., M.D. Birm., M.R.C.P.: asst. physician.

Middlesex County Council:
CARTER, A. BARHAM, M.D. Camb., M.R.C.P.: physician, Ashford County Hospital.
CASTLEDEN, L. I. M., M.D. Lond., M.R.C.P.: physician, Redhill County Hospital.
FORTY, FRANK, M.B. Lond., F.R.C.S.: surgeon, Redhill County Hospital.
HALL, H. W., M.B. Lond., F.R.C.S.: surgeon, North Middlesex County Hospital.
JACKSON, E. B., M.D. Lond., M.R.C.P.: physician, Hillingdon County Hospital.
JONES, F. AVERY, M.D. Lond., F.R.C.P.: physician, Central Middlesex County Hospital.
KEMPTHORNE, RENATUS, B.M. Oxfd, M.R.C.P.: physician, North Middlesex County Hospital.
LAIRD, ROBERT, CH.M. Glasg., F.R.C.S.E.: surgeon, Clare Hall County Hospital.
MATHESON, N. M., M.B. N.Z., F.R.C.S., M.R.C.P., F.A.C.S.: surgeon, Ashford County Hospital.
MORGAN, JOYCE, M.D. Lond., M.R.C.O.G., D.A.: obstetric surgeon, Hillingdon County Hospital.

Queen Victoria Royal Infirmary, Preston:
ANDERSON, D. M., M.D. Edin., M.R.C.P.E.: physician.
CORBET, R. H. J. M., M.B. Dubl., M.A.O., F.R.C.S.I., F.R.C.P.I., F.R.C.O.G.: obstetrician-gynæcologist.
GARDEN, R. S., M.B. Aberd., M.CH.ORTH. Lpool, F.R.C.S.E.: orthopædic surgeon.
GRAHAM, W. H., M.B. Glasg., F.R.C.S.: urologist.
WISEMAN, D. C., M.B. Glasg., F.R.C.S.E., M.R.C.O.G.: asst. obstetrician-gynæcologist.

Royal United Hospital, Bath:
APLEY, JOHN, M.D. Lond., M.R.C.P.: pædiatrician.
BASTOW, JOHN, M.D. Melb., F.R.C.S.: orthopædic surgeon
EVANS, C. D., O.B.E., M.B. Camb.: dermatologist.
FULLER, H. L., F.R.C.S.: surgeon.
GLASER, S., M.B. Lond., F.R.C.S.: asst. surgeon.
HEATHCOTE, H. J., M.B. Camb.: venereologist.
HILL, L. C., M.D. Birm., F.R.C.P.: asst. physician.
HOFFMAN, H. L., M.D. Camb., M.R.C.P.: asst. physician.
JOHNSON, H. J., M.B. Durh., D.M.R.E.: asst. radiologist.
KERSLEY, G. D., M.D. Camb., F.R.C.P.: physician.
LEECH-WILKINSON, ARTHUR, B.M. Oxfd, F.R.C.S.: gynæcologist.
MONTGOMERIE, T., M.B., D.A.: anæsthetist.
MURPHY, F. D., O.B.E., M.B. N.U.I., F.R.C.S.: asst. surgeon.
NEILL, H. G., M.B. Glasg., F.R.F.P.S.: anæsthetist.
NORTHOVER, P. T., M.D. Edin., D.A.: anæsthetist.
SANSON, J. M., M.B. Edin., F.R.C.S.E., M.R.C.O.G.: asst. gynæcologist.
WATSON, MARY, M.B. N.Z.: anæsthetist.
WILSON, DONALD, M.B. Lond., M.R.C.P.: physician to physiotherapy dept.

Examining Surgeons under the Factories Act, 1937:
MACARTHUR, DUNCAN, M.B. St. And.: Sevenoaks, Kent.
MILNE, J. P., M.B. Aberd.: Keith, Banff.
MOORHEAD, C. E., M.B. Birm.: Chipping Campden, Gloucester.
PORTER, A. S., M.R.C.S.: Hitchin, Hertford.
SPARK, C. V., M.B. Aberd.: Atherstone, Warwick.

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Notes and News

L.C.C. HOSPITAL COMMITTEES

AT the outbreak of war the monthly meetings of these hospital committees were temporarily suspended, and they are at present still only meeting four times a year. The council now proposes that after the holidays meetings should be held every two months, and they hope to reconsider the matter early next year. The orders of reference of the committees will be the same as before, including regular visits to the wards and inspection of diets, appointment of ladies' visiting committees, investigation of complaints by patients, examination of the hospital books, consideration of reports by the medical superintendent and other senior officers, approval of requisitions for supplies, appointment and promotion of certain grades of staff, disposal of small gifts of money, and consideration of works for inclusion in the annual maintenance estimates. Before the war the committees also dealt with the granting of special and casual leave and with discipline, but these matters are now reserved for the establishment and general purposes committees of the council where they will, at any rate for the present, remain.

So far the hospital committees have dealt only with administrative matters not involving expenditure. The council now proposes to authorise them to sanction expenditure for annual amounts, varying from £200 for larger hospitals to £50 for smaller hospitals. They will be allowed to spend money on small improvements, such as bookcases or electrical equipment for patients or staff, and on the provision of additional amenities, such as furniture or pictures. These changes are part of the council's policy of " strengthening the individuality of each hospital without prejudice to its efficient administration as an integral part of a large service."

BIRTHS AND MARRIAGES

LIVE births in England and Wales during the June quarter of this year totalled 203,797, which represents a birth-rate of 19·2—the highest in any quarter since June, 1925. In the previous quarter, ended March 31, the number of births was 181,445; this exceeded deaths by 26,292. Infant mortality in the March quarter was 55 per thousand related live births —14 per 1000 below the average of the preceding ten March quarters and 4 below the March quarter, 1945. The number of illegitimate births—14,577—was 3061 fewer than in the corresponding period last year. Marriages totalled 77,480—an increase of 866 over the March quarter a year ago, but 3360 fewer than the average for the March quarters of the years 1940–44. These figures are given in the Registrar-General's Return for the March quarter, obtainable from H.M. Stationery Office at 6*d*.

University of London

Dr. N. Hamilton Fairley, F.R.S., has been appointed to the Wellcome chair of tropical medicine tenable at the London School of Hygiene and Tropical Medicine, from Oct. 1 next. Dr. George Macdonald, whose appointment as director of the Ross Institute of Tropical Medicine was announced last December, has been appointed to the university chair of tropical hygiene tenable at the London School of Hygiene and Tropical Medicine, from Oct. 1 next.

Dr. F. C. O. Valentine has been appointed to the university readership in chemotherapy tenable at the London Hospital Medical College, from Oct. 1 next. The title of professor of morbid anatomy and histology has been conferred on Dr. R. W. Scarff, in respect of the post held by him at the Middlesex Hospital Medical School.

The title of professor emeritus of helminthology has been conferred on Prof. R. T. Leiper, F.R.S., who retires in September from the William Julien Courtauld chair of helminthology at the London School of Hygiene and Tropical Medicine, which he has held since 1917. The title of professor emeritus of experimental pathology has been conferred on Prof. E. L. Kennaway, F.R.S., who retires in September from the chair of experimental pathology at the Chester Beatty Research Institute of the Royal Cancer Hospital, which he has held since 1931.

At a recent examination for the academic postgraduate diploma in public health the following candidates from the London School of Hygiene were successful:

S. G. Abelson, Olatunji Adeniyi-Jones, Alexander Anderson, A. E. Brown, J. M. Brown, E. J. Bury, A. L. Cochrane, W. C. Cockburn, E. R. Dansie, R. D. Dewar, W. Y. Fettes, Christie W. Gordon, C. G. Hunter, M. T. I. Jones, Sung-Jui Liao, M. J. Lowther, J. P. P. Mackey, A. H. M. Richards, E. M. Rowland, Alice C. N. Swanston, G. H. Taylor, and John Watkins-Pitchford.

University of Edinburgh

At a graduation held on July 24 the following degrees and diplomas were conferred:

M.D.—Ahmed El Shahed (in absentia), †James Innes, ‡R. J. G. Rattrie, ‡J. S. Robson (in absentia), D. C. Ross, and ‡I D. Willatt (in absentia).

M.Ch.—§I. S. Smillie, O.B.E., and Robert Strang.

M.B., Ch.B.—Grace Barker, Patricia M. Barraclough, Elizabeth L. Batchelor, Margaret R. Bate, F. A. Beale, Fiona M. Bennett, H. L. Binnie, W. L. Blackett, W. J. O. Box, *Mary M. M. Boyd, E. R. Brooks, J. R. Brotherton, Joseph Brown, Pamela J. Brown, S. P. Bruce, Mary C. Buchanan, Katharine A. Burn-Murdoch, James Burton, Alick Cameron, W. W. Campbell, I. W. Clark, *Barbara E. Clayton, D. C. Cockburn, Iole L'E. K. de Lingen, A. C. Douglas, David Duncan, J. A. Ewing, R. M. Foster, A. D. B. Fotheringham, Robert Frater, E. N. S. Fry, K. G. Gadd, W. R. Galloway, Constance A. Gibbs, R. A. F. Gilbert, J. M. Gill, Roy Gillott, Philippa A. Glyn, Abraham Goldberg, R. H. Gosling, Jessie E. J. Grainger, E. R. Gunn, Sheila I. Haldane, K. C. R. Halliday, T. L. Henderson, J. S. Holden, Ronald Houston, Moira B. Hughes, Elizabeth S. Humble, R. C. Humphreys, Morag L. Insley, A. S. Ireland, Gordon Irvine, A. B. Jamieson, D. A. L. Jones, J. D. Kerr, Alison B. King, Isabella Kingan, Charlotte M. M. Kirkcaldie, I. C. S. Knight, R. R. Lam, S. G. E. Laverty, Rosemary W. Lawrence, Isabel J. K. Ledger, Mary K. Lethem, I. C. Lewis, K. A. Lim, P. D. Livingstone, Helenor F. Lochhead, *J. A. Loraine, Ethel M. J. Loudon, A. C. M'Dougall, Margaret M. MacDougall, W. A. Macdougall, P. C. MacGillivray, R. C. MacGillivray, D. M. MacKay, I. G. MacKenzie, D. L. MacKinnon, John MacLean, Alastair M'Nab, R. C. Macnair, Betty Mallace, Dilys Manners, T. S. Martin, K. W. Matheson, Katherine-Alice Mercer, J. D. C. Millar, F. R. D. Minett, R. R. W. Mirrey, Irene M. J. Monaghan, Isobel S. Mowat, Elspeth M. Orr, O. E. Owen, J. R. Page, H. M. Park, F. L. Rawson, Alexander Reid, David Reid, M. V. Richards, Boris Ruebner, *W. R. St. Clair, Kathleen I. Scott, Anne K. I. Sellers, W. L. Sewell, Helen M. Shearer, C. G. Sim, D. A. Sime, D. C. Simpson, Kenneth Sinclair, G. McM. Smibert, L. S. Smith, I. F. Sommerville, A. R. Somner, J. O. Taubman, Emily D. J. Todd, C. H. M. Walker, C. H. Wheatley, *Rachel B. White, J. W. Whittick, A. J. Williams, C. E. Williams, A. T. Wilson, J. T. Wright, Duncan Yuille, and Monica M. Zealley.

D.P.M.—J. B. Methven (in absentia).

D.T.M. & H.—William Bain, J. A. P. Bouton (in absentia), George Buchanan (in absentia), C. W. F. MacKay, J. P. Mehrotra, K. D. Moynagh, W. O. Petrie (in absentia), and J. M. Smith.

M.D. of the Polish School.—Kazimierz Durkacz, Lukasz Kulczycki, Magdalena K. Munk, Roman Rejthar, Olgierd Rymaszewski, T. J. Szczesniak, and Henryk Wójcicki.

M.B., Ch.B. of the Polish School.—Antoni Bobak, Wladyslaw Galecki, Karol Getta, Zenon Giedrys, Eliasz Grubsztejn, Wojciech Kaczmarek, Andrzej Kurowski, Tadeusz Labecki (in absentia), Zbigniew Liskowicz, Zbigniew Milewski, Liwia Mitis, Karol Sztabert (in absentia), Leon Wachala, and Adam Wloczewski.

* With honours. † Highly commended. ‡ Commended.
§ Awarded gold medal.

The Cameron prize in practical therapeutics was awarded to Dr. Albert Szent-Györgyi, professor of medical and organic chemistry in the University of Szeged, Hungary, in recognition of his contributions to our knowledge of vitamin C.

University of Birmingham

The following appointments to full-time clinical chairs have been announced: medicine, Dr. W. M. Arnott; surgery, Mr. F. A. R. Stammers; pædiatrics and child health, Dr. J. M. Smellie; and obstetrics and gynæcology, Mrs. Hilda N. Lloyd. Mrs. Lloyd was appointed to the chair of obstetrics and gynæcology two years ago.

University of Leeds

Dr. H. V. Dicks has been appointed to a new full-time chair in psychiatry, and Dr. W. S. Craig to a new full-time chair in pædiatrics. New chairs have also been instituted in chemical pathology, biochemistry, and pharmacology. Dr. J. G. McCrie has been appointed to the new post of senior administrative officer in the medical school.

University of Manchester

Prof. H. S. Raper, F.R.S., who has held the chair of physiology in the university since 1923, has been appointed full-time dean of the medical school and professor of chemical physiology from September next. Dr. Walter Schlapp, at present reader in experimental physiology and assistant director of the physiological laboratories, has been appointed Brackenbury professor of physiology and director of the laboratories from September next, in succession to Professor Raper.

Dr. Schlapp, after serving in the Army during the war of 1914–18, entered the University of Edinburgh, where he graduated B.SC. in chemistry in 1923 and obtained the degree of PH.D. in physiology in 1927. He qualified M.B. in 1930, and held a Carnegie research fellowship in Edinburgh, where he was a demonstrator in the department of physiology. In 1930 he was appointed assistant lecturer in pharmacology in the University of Manchester, and, later that year, lecturer in experimental physiology. In 1939 he was made assistant director of the physiological laboratories, and this year was promoted to a readership. Since 1935 Dr. Schlapp has been tutor and secretary to the faculty of medicine. His special interests have been in the physiology of the central nervous system and in endocrinology. He has published papers on gastric secretion, pituitary hormones, the actions of adrenaline, cardiac glycosides, blood chemistry, and electronic methods. His most recent work has been on pulse-wave velocity and auricular fibrillation.

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University of Glasgow

Dr. R. A. Lennie has been appointed to the regius chair of midwifery in the university.

Born in 1889, Dr. Lennie was educated at Glasgow High School and the University of Glasgow. Among the positions he has held are those of professor of midwifery and gynæcology, St. Mungo's College; examiner for the fellowship and licence, Royal Faculty of Physicians and Surgeons; gynæcologist, E.M.S. Hospital, Bangour; and foundation member and member of the first full council, Royal College of Obstetricians and Gynæcologists, 1929–34. He is senior obstetric surgeon to the Glasgow Royal Maternity and Women's Hospital, and gynæcologist to the Victoria Infirmary, Glasgow. He is also lecturer in midwifery and examiner at the University of Glasgow; clinical examiner, University of Edinburgh; examiner to the Central Midwives Board for Scotland; and president of the Glasgow Obstetrical Society. In 1945 Dr. Lennie retired with the honorary rank of colonel from the active list of the Territorial Army, in which he had served since December, 1914. During the war of 1914–18 he served with the 52nd Lowland Division in Gallipoli, Egypt, Palestine, and France, and in the late war he organised and commanded for over two years a 600-bed base hospital in Scottish Command. He is the author of numerous papers on obstetrical subjects, and is a council member of the St. Andrew's Ambulance Association.

University of Dublin

Honorary degrees conferred on July 3 included that of M.D. for Sir Herbert Eason, president of the General Medical Council, and of D.SC. for Sir Alexander Fleming, F.R.S., professor of bacteriology in the University of London.

Royal College of Physicians of London

At a comitia of the college, held on July 25, with Lord Moran, the president, in the chair, the following fellows were elected officers for the ensuing year:

Censors: Dr. G. E. Ward, Dr. E. Bellingham Smith, Dr. William Johnson, and Sir Adolphe Abrahams. Treasurer: Prof. W. G. Barnard. Registrar: Dr. H. E. A. Boldero. Assistant Registrar: Dr. W. D. W. Brooks. Members of the library committee: Sir Archibald Gray, Dr. Macdonald Critchley, Prof. Edward Charles Dodds, F.R.S., and Prof. J. M. Mackintosh. Members of the finance committee: Dr. Maurice Campbell, Dr. J. L. Livingstone, and Dr. J. St. C. Elkington.

The following were elected examiners:

L.R.C.P.—Chemistry: Mr. Alexander Lawson, PH.D., and Mr. John Lowndes, F.R.I.C. Physics: Prof. Sidney Russ, D.SC., and Mr. J. H. Brinkworth, M.SC. Materia Medica and Pharmacology: Dr. E. C. Warner, Dr. H. L. Marriott, Dr. Wilfred Oakley, Prof. Noah Morris, and Dr. C. A. Keele. Physiology: Prof. Samson Wright, and Prof. Hamilton Hartridge, F.R.S. Anatomy: Prof. Thomas Nicol. Pathology: Dr. E. N. Chamberlain, Dr. R. J. Pulvertaft, Dr. Archibald Gilpin, and Prof. W. D. Newcomb. Medical anatomy and principles and practice of medicine: Dr. George Hall, Dr. Geoffrey Bourne, Dr. Reginald Hilton, Dr. L. B. Cole, Dr. J. L. Livingstone, Dr. K. Shirley Smith, Dr. Maurice Shaw, Dr. W. E. Lloyd, Dr. A. M. Cooke, Dr. T. C. Hunt, Dr. J. C. Hawksley, and Dr. F. P. L. Lander. Midwifery and diseases peculiar to women: Mr. D. H. Macleod, Mr. C. M. Gwillim, Mr. H. L. Shepherd, Mr. J. E. Stacey, and Mr. G. F. Gibberd.

D.P.H.—Part I: Dr. M. E. Delafield. Part II: Dr. J. G. Wilson.

D.T.M. & H.—Section A: Major-General Sir Alexander Biggam. Section B: Prof. P. A. Buxton, F.R.S.

D.O.M.S.—Dr. S. P. Meadows.

D.P.M.—Part I: Dr. Desmond Curran. Part II: Prof. P. C. P. Cloake and Prof. A. J. Lewis.

D.L.O.—Mr. D. F. A. Neilson.

D.M.R.—Prof. W. V. Mayneord, D.SC., Dr. E. R. Williams, and Prof. B. W. Windeyer.

D.A.—Prof. R. R. Macintosh and Dr. A. S. Daly.

D.C.H.—Dr. W. G. Wyllie and Dr. A. G. Watkins.

D.P.M.—Part I: Mr. L. H. Clarke, PH.D., and Dr. H. A. Dunlop. Part II: Sir Robert Stanton Woods and Dr. W. S. C. Copeman.

D.I.H.—Part I: Dr. J. A. Charles. Part II: Dr. R. E. Lane.

Prof. W. E. Hume was elected representative of the college on the council of King's College, University of Durham. The following lecturers were appointed for 1947: Dr. C. E. Lakin (Harveian orator), Dr. Janet Vaughan (Bradshaw lecturer), Dr. F. Avery Jones (Goulstonian), Dr. J. P. Martin (Lumleian), Prof. F. C. Bartlett, F.R.S. (Oliver-Sharpey), Sir Arthur MacNalty (FitzPatrick), Mr. Harold Nicolson (Lloyd Roberts), and Prof. P. C. P. Cloake (Humphry Davy Rolleston).

The Murchison scholarship for 1946 was awarded to Dr. J. D. Judah.

The following, having satisfied the censors' board, were elected to the membership:

Raouf, Al-Mankabadi, M.B. Cairo; C. D. Anderson, M.C., M.B. Camb.; D. A. P. Anderson, M.B. Camb.; Abd-el-Hamid Ata, M.B. Cairo; D. A. Ballantyne, M.B. N.Z.; H. S. Barber, M.D. Dubl.; Gerhard Behr, L.R.C.P.; R. C. S. Benson, M.B. Lond.; T. S. L. Beswick, M.B. Camb.; D. W. Beynon, M.B. Lond.; E. J. Blair, M.D. Durh.; Anne Bolton, M.B. Camb.; N. R. Butler, M.B. Lond.; J. E. Cates, M.D. Lond.; F. E. de W. Cayley, M.B.E., L.R.C.P.; Max Chitters, M.B. Witw'srand; J. W. C. Cochrane, M.D. Witw'srand, M.B. Lond; W. H. R. Cook, M.B. Lpool; I. S. Dalton, M.B. Lond.; H. E. De Wardener, M.B.E., M.B. Lond.; R. C. S. Dick, M.B. Camb.; Hugo Droller, M.D. Munich; Margaret E. Edmunds, M.B. Lond.; A. C. Elithorn, M.B. Camb.; G. R. Fryers, M.B. Leeds; W. R. Gauld, M.D. Aberd.; J. A. L. Gilbert, M.B. Edin.; Alexander Guedatarian, L.R.C.P.; Michael Hamilton, M.B. Lond; J. B. Heycock, L.R.C.P.; G. E. Hosking, M.B. Lond. and Wales; C. A. Houlder, M.B. Lond.; A. M. Jelliffe, M.B. Lond.; E. S. Jones, M.B. Lpool; J. D. O. Kerr, M.B. Glasg.; P. D. C. Kinmont, M.B.E., M.B. Lond.; S. C. Kusumgar, M.B. Bombay; J. W. Lacey, M.D. Camb.; D. R. Laurence, M.B. Lond.; Emil Leigh, M.D. Leeds; D. C. Lewin, M.B. Lond.; L. A. Liversedge, M.D. Duke, M.B. Manc.; Gerard Lorriman, M.B.E., M.B. Durh.; B. H. McCracken, M.D. Wisconsin, M.B. Wales., flying-officer R.A.F.V.R.; A. J. S. McFadzean, M.B. Glasg.; F. M. McGown, M.B. Camb.; Gerald MacGregor, M.B. Lond., surgeon lieutenant R.N.V.R.; K. S. MacLean, M.B. Camb.; Mary L. Mittell, M.B. Lond.; J. H. Moseley, M.B. Camb.; Bernard Moshal, M.D. Dubl.; P. B. L. Muldoon, M.B. N.U.I., major R.A.M.C.; G. R. E. Naylor, M.B. Camb.; C. S. Nicol, M.B. Lond.; J. C. R. Nuttall-Smith, M.C., M.B. Camb.; A. B. Pollard, M.B. Lond.; B. W. Powell, M.B. Camb.; S. B. Rampling, M.B. Manc., captain R.A.M.C.; T. L. Reeves, M.B. Lond.; Frank Robertson, M.D. Durh.; G. R. Royston, M.D. Lond.; K. J. Samson, M.D. Hamburg; Robert Semple, M.B. Aberd.; N. M. Shah, M.D. Bombay; Sheila Sheehan, M.B. Dubl.; J. R. Sinton, M.B. Lond.; R. B. Sloane, M.B. Lond.; David Stafford-Clark, M.B. Lond.; R. P. Strang, L.R.C.P.; J. A. Strong, M.B.E., M.B. Dubl.; H. J. C. Swan, M.B. Lond.; N. G. Talwalkar, M.D. Bombay; P. E. R. Tattersall, M.B. Leeds; D. C. Thursby-Pelham, L.R.C.P.; Henryk Urich, M.B. Polish School of Medicine, Edin.; G. C. Wells, M.B. Camb.; D. A. J. Williamson, M.B. Lond.; B. D. R. Wilson, M.B. Lond.; and Clifford Wilson, D.M. Oxfd.

Licences to practise were conferred upon the following 118 candidates (91 men and 27 women) who have passed the final examination of the Conjoint Board and have complied with the by-laws of the college:

A. R. L. Abel, Davida M. Adams, D. M. C. Ainscow, E. J. Allaway, Barbara M. Ansell, Constance M. A. Bachtin, Margaret E. Bailey, Stanley Balfour-Lynn, Joan A. Barrett, H. D. Beckett, E. I. Bieber, Donald Bigley, D. K. Briggs, R. H. Broughton, Harold Caplan, V. L. Cartledge, D. M. T. Cones, P. D. Crosbie, A. M. Davies, P. R. Davis, R. C. Davison, Rosemary Dearden, Mary M. Dickinson, Romola D. Dunsmore, D. R. Edwards, H. E. Ffoulkes, G. H. Fisher, D. P. Fitzgerald, Ian Fletcher, Frances M. Fountain, R. O. J. Fry, J. D. Fuller, B. D. Grant, Dora Green, H. G. Griffin, I. R. Haire, P. H. T. Hall, F. A. E. Hamilton, G. J. L. Hamilton, J. R. Handforth, J. J. Hopkinson, R. J. Howat, Edna G. Howe, Gough Hughes, G. C. Hunter, Ian Jackson, P. D. C. Jackson, Thomas Jackson, Glyndwr Jeffreys, N. B. Jetmalani, Robert John, J. W. G. Johnson, Catherine M. E. Jones, C. W. L. Jones, D. W. W. Jones, I. S. M. Jones, Thelma D. Jörgensen, R. S. Kagan, R. C. Keane, G. W. Korn, Marjorie A. C. Kuck, T. D. Lambert, Gertrude Latner, Kingsley Lawrance, R. M. H. Layland, M. B. Lennard, Cyril Levin, T. L. T. Lewis, R. I. T. Lindsay, Janet G. S. McDowall, E. P. Mackenzie, H. H. Margulies, Margaret A. Marten, T. C. H. Mathews, Gladys A. Meigh, G. S. Metters, J. R. Mikhail, Kate H. Miller, P. R. Miller, J. B. Moore, N. S. Moores, Marguerite F. E. Morford, C. P. Newcombe, William Nixon, J. A. Noblett, L. W. Oxenham, James Parkyn, John Pavey-Smith, B. W. Perlow, J. I. Pugh, R. J. Randall, H. M. Rayner, G. A. Readett, Robert Renwick, Beatrice E. S. Richards, J. P. R. Richardson, J. F. S. Robertson, K. W. Robinson, H. E. Robson, P. N. Robson, Rosemary J. M. Rose, B. L. L. Rygate, Jutta Scharfstein, Desmond Seymour, B. E. Shairp, Dorothy M. Silvester, Patricia M. Stanwell, K. D. Stewart, Janet Sutherland, C. K. M. Thacker, Joan M. H. Thomas, John Thompson, Peter Timmis, Leon Walkden, R. W. W. Watson, F. E. Webb, A. A. Weyman, and J. L. Whitmore.

Diplomas in anæsthetics, in psychological medicine, and in laryngology were conferred on those named in reports from the Royal College of Surgeons in our issues of June 22 and July 20, and in tropical medicine and hygiene to those named in our issue of June 29, and to E. A. Lumley. Diplomas in public health were also conferred jointly with the Royal College of Surgeons on the following:

Jack Beeston, Phœbe Charlton, B. A. Coghlan, R. V. Coxon, Enid G. M. Cummings, H. S. Fraser, S. MacL. Frazer, A. A. Huse, J. P. Kennedy, A. A. Lewis, G. L. McLeod, Mary N. M. Paulin, Mary Roland, R. G. Samuel, E. L. Tee, and R. L. Worrall.

Scottish Conjoint Board

At recent examinations of the Royal Colleges of Physicians and Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow, the following were successful:

L.R.C.P. & S.E., L.R.F.P.S.

E. A. Barrett, W. R. Brown, W. S. Brown, Mary G. Buchanan, John Duncan, A. S. Dunn, Margaret W. Gerrard, R. F. Gray, Ian Lamond, G. A. Lawrenson, Julia I. Leitch, G. C. Mackie, Catherine H. Mair, H. M. Mann, Jeannette B. Morrison, N. A. Oppenheim, A. C. Pole, J. L. Quartey-VanderPuije, J. N. Rankin, B. W. T. Richardson, H. K. Rose, Agnes W. M. Scott, Kirsty F. Semple, W. P. Thomson, John Watson, A. J. Williams.

Royal College of Physicians of Edinburgh

At a quarterly meeting of the college on July 16, Dr. D. M. Lyon, the president, intimated that the following had accepted honorary fellowship:

Major-General Sir Alexander Biggam, Sir Henry Dale, O.M., F.R.S., Prof. N. Hamilton Fairley, F.R.S., Sir Alexander Fleming, F.R.S., Sir John Fraser, Lord Moran, F.R.C.P., and Major-General Sir Percy Tomlinson.

Dr. R. H. Girdwood (Edinburgh), Dr. A. H. Campbell (Redhill), and Dr. S. G. Graham (Glasgow) were introduced and took their seats as fellows of the college. Major William Happer, Dr. R. J. Kellar (Edinburgh), Dr. G. D. Malcolm (Bridge of Earn), and Sir Andrew Davidson (Edinburgh), were elected fellows.

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Royal College of Surgeons of Edinburgh

At a meeting of the college on July 25, with Mr. J. M. Graham, the president, in the chair, the following were admitted to the fellowship:

R. D. I. Beggs, M.B. Camb.; H. W. Gallagher, M.B. Belf.; G. C. Gordon, M.B. Glasg.; D. B. Handelman, L.R.C.P.E.; R. W. B. Holland, M.B. Edin.; C. M. Hopkins, M.B. Melb., M.R.C.O.G.; Philip Jardine, L.R.C.P.E.; J. P. Lane, M.B., N.U.I.; T. J. McCormac, M.B. N.Z.; Matthew McLearie, M.B. Glasg.; A. M. Millar, M.B. Melb.; G. H. Moore, M.B. Manc.; J. F. Paxton, M.B. Camb.; H. H. Pearson, M.B. Sydney; N. A. Punt, M.R.C.S.; Sidney Sacks, M.B. Cape Town; D. G. Simpson, M.B. N.Z.; W. M. Van Essen, M.R.C.S.

Royal College of Obstetricians and Gynæcologists

At a meeting of the council on July 27, with Mr. Eardley Holland, the president, in the chair, Mr. William Gilliatt was elected president to take office in September next. Mr. R. M. Allan and Sir William Fletcher Shaw were elected vice-presidents.

The following were elected to the membership:

H. R. Arthur, S. J. Barr, B. E. Blair, Catherine I. Blyth, Joyce M. Burt, Harold Burton, G. B. W. Fisher, B. G. Halder, R. L. Hartley, Derek Jefferiss, Iola L. T. Jones, L. W. Lauste, Elizabeth McCallum, Margaret Orford, H. C. Perry, D. L. Poddar, Esther M. Pollock, J. E. Scott-Carmichael, W. R. Sloan, R. A. R. Taylor, E. W. L. Thompson, T. G. E. White.

Society of Medical Officers of Health

The county-borough group held its annual meeting from July 19 to 22 at Eastbourne under the presidency of Dr. R. H. H. Jolly. Dr. W. S. Walton, newly appointed M.O.H. for Newcastle-upon-Tyne, was elected president for the coming year. The secretary is Dr. J. Greenwood Wilson. Among the addresses given was one by Dr. Scott Williamson on the work of the Peckham Pioneer Health Centre from its foundation. Many members said they would do their best to promote similar centres in their own areas. Dr. F. Fenton, M.O.H. for Eastbourne, in a paper on the Care of Homeless Children, stressed the need for coördination of their care through the person of the medical officer of health. The group resolved to recommend that this policy should be advocated by the council of the society. Prof. J. M. Mackintosh, in an address which stirred his hearers, outlined his ideas for the training of medical administrators.

Royal Medico-Psychological Association

At the annual dinner of this association, held at the Royal College of Physicians of Edinburgh on July 17, Prof. D. Murray Lyon, president of the college, proposed the toast of The Association. One of the features of old Edinburgh, he recalled, had been the multiplicity of clubs and societies. Some were designed for mutual protection of their members, some for mutual improvement and education, and some for purely social purposes. He was glad to see that the Royal Medico-Psychological Association successfully fulfilled all these functions. In his reply Prof. D. K. Henderson, the president, urged the members to keep their minds on the future, but also asked them to remember to pay tribute to many men and women who were not themselves psychiatrists, or even doctors, but had been pioneers in mental health. William Tuke, Elizabeth Fry, Octavia Hill, and Florence Nightingale, by their intelligence and diligence and far-sightedness had advanced tremendously the cause for which they all stood. He recalled also two Americans: Dorothea Dix came to Edinburgh in 1855 and it was through her initiative that the present system of mental hospitals was begun in Scotland; Clifford Beers founded in 1907 the Connecticut Society for the Development of Mental Hygiene, a step in the evolution of the mental services whose significance could not be exaggerated. Professor Henderson thought it very important that psychiatrists should work in close touch with intelligent laymen. He wished to express publicly the appreciation of all physician-superintendents of mental hospitals, like himself, for the wholehearted voluntary work and coöperation of their boards of management, and he emphasised the value of the voluntary system in hospital management in general, but particularly in relation to mental hospitals. The toast of The City of Edinburgh was proposed by Dr. W. S. Maclay, and in his reply Sir John Falconer, lord provost, spoke particularly of the work which psychiatrists were doing in the study of psychosomatic disorders and in child guidance. The child-guidance clinic recently set up by the Edinburgh corporation was giving most encouraging results. Dr. W. M. McAllister's proposal of The Guests brought replies from Lord Cooper (Lord Justice Clerk) and Sir William Darling, M.P.

Beit Memorial Fellowships

Sir John Anderson, F.R.S., and Sir Henry Dale, O.M., F.R.S., have been elected trustees of the fund. The following awards have been made:

FOURTH YEAR FELLOWSHIPS

G. J. Popjak, M.D. To study the behaviour of plasma lipids under different experimental conditions and the problem of fœtal fat metabolism. At the department of pathology, St. Thomas's Hospital, London.

Ethel G. Teece, PH.D. To study the chemistry of bacterial polysaccharides and nucleoproteins with special reference to the Gram complex and to the factors responsible for cell division. At the department of chemistry, University of Birmingham.

JUNIOR FELLOWSHIPS

S. E. Dicker, M.D., PH.D. To study the extrarenal water metabolism and renal function in rats. At the department of pharmacology, University of Bristol.

P. M. Tow, M.B. To study prefrontal leucotomy and the function of the frontal area. At the research department, Runwell Hospital for Nervous and Mental Diseases.

Royal Appointments

Major-General J. C. A. Dowse, C.B., C.B.E., M.C., M.B., late R.A.M.C., has been appointed honorary physician to The King in succession to Brigadier H. A. Sandiford, and Major-General E. A. Sutton, C.B.E., M.C., late R.A.M.C., honorary surgeon in succession to Major-General G. A. Blake.

World Federation of Scientists.—This federation owes its foundation to the Association of Scientific Workers, not to the British Association as stated on p. 146 of our last issue.

In the article by Dr. K. B. Rogers (July 20, p. 87) "*Staph. pyogenes*" should read "*Strep. pyogenes.*"

Medical Diary

Aug. 4–10

Thursday, 8th

Medical Society of the L.C.C. Service

3 P.M. (Hammersmith Hospital, Ducane Road, W.12.) Clinical meeting.

Births, Marriages, and Deaths

BIRTHS

Cobbe.—On July 24, the wife of Dr. C. J. Cobbe, M.B.E.—a son.

Cust.—On July 21, the wife of Dr. Norman Cust, of Elvaston Place, S.W.7—a daughter.

Fraser.—On July 7, at Bermuda, the wife of Surgeon Commander P. K. Fraser, R.N.—a daughter.

Longmore.—On July 29, in Oxford, the wife of Dr. J. B. Longmore—a daughter.

MARRIAGES

Colebrook—Scovell.—On July 26, at Birmingham, Leonard Colebrook, F.R.C.O.G., F.R.S., to Vera, widow of Edward Scovell.

Hewat—Boyd-Perkins.—On July 27, in London, Richard Middleton Hewat, M.R.C.S., wing-commander R.A.F., to Kathleen Mary Boyd-Perkins, P.M.R.A.F.N.S.R.

Reid—Pedler.—On July 25, in London, Douglas Andrew Campbell Reid, M.R.C.S., to Margaret Joyce Pedler, M.B.

DEATHS

Aldred-Brown.—On July 26, at Bath, George Ronald Pym Aldred-Brown, D.M. Oxfd.

Boeckx.—On July 22, in London, Ludovicus Cornelius Josephus Boeckx, M.D. Louvain, aged 71.

Colwell.—On July 22, at Bognor Regis, Hector Alfred Colwell, M.D., PH.D. Lond., M.R.C.P., aged 70.

Gemmill.—On July 28, in Birmingham, William Gemmill, M.B. Edin., CH.M. Birm., F.R.C.S.

Hunter.—On July 24, at Bournemouth, Joseph Hunter, M.B. Dubl., surgeon major I.M.S. retd., of Londonderry, aged 95.

Jones.—On July 23, at Umzinto, Natal, Francis Samuel Jones, M.R.C.S., aged 67.

Wilkinson.—On July 7, in Dublin, Thomas Biddulph Pilsworth Wilkinson, M.B. R.U.I., formerly of Plymouth, aged 82.

. . . At present the G.M.C. consists of practising doctors exactly as if the Prison Commissioners were practising burglars and murderers. It is a professional association of the worst type, a hundred years out of date scientifically. Its record is infamous. . . . I must not cumber your columns with notorious instances of its superstitions, its prolongation of expensive medical apprenticeship by disheartening rubbish which the student has to unlearn or forget at the bedside, its ignorance of the history of medical science, and its absurd amateur statistics dating from a time when uncontrolled post hoc propter hoc inferences, and percentages based on two or three cases, passed as mathematical certainties. . . . I am too old to keep hammering in the case I stated in my preface to *The Doctor's Dilemma*. All I can do, with your permission, is to warn Mr. Bevan that if he does not make a clean sweep of the doctors from the G.M.C. and a thorough revision of the curriculum there will be trouble for him which may run to a breakdown of the Act.—Mr. Bernard Shaw, *Times*, July 30.

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EPIDEMIOLOGY AND THE PSYCHOSOMATIC AFFECTIONS *

A STUDY IN SOCIAL MEDICINE

JAMES L. HALLIDAY
M.D. Glasg., D.P.H.

"Every personal problem is more than a personal problem; it is a communal one."

"I never rightly understood—about that," murmured the shepherd.

"Who does?" replied the philosopher, "after giving more years to it than I can remember, my own thoughts have become a little clear only to myself."—*The Serpent*, a novel, by Neil M. Gunn, 1943.

A STRIKING feature of the public health of the 20th century was the rising incidence of many psychosomatic affections. Concomitantly the incidence of hysteria seemingly declined. My purpose here is to draw attention to the epidemiological issues raised by these tendencies and to indicate their importance to social medicine.

The affections that showed a rising trend included not only the various bodily disturbances associated with states of anxiety or depression but also such defined organic diseases as gastritis, peptic ulcer, exophthalmic goitre, diabetes, "fibrositis," and the cardiovascular hypertensive disorders—notably coronary thrombosis, cerebral hæmorrhage, and the cardiovascular-renal syndrome. (These disease names may be regarded in many instances as referring to the structural end-results of prolonged psychophysiological dysfunction in specially predisposed individuals.)

In a previous study (Halliday 1945b) I analysed the statistical behaviour of these diseases in Britain in 1900–39 and remarked not only on their rising incidence but also on their greater frequency in urban than in rural areas and the differing incidence between various occupational groups and social classes. A description was also given of the "shift" in sex-incidence and in age-incidence that occurred during the period surveyed.

Origin of Upward Trend of Psychosomatic Organic Affections

When did the upward trend in these affections begin in Britain? The question cannot be answered directly, because official mortality-rates for the 19th century in respect of such diseases as duodenal ulcer, exophthalmic goitre, diabetes, and the hypertensive cardiovascular disorders are either not available or are not susceptible of interpretation. Some indication is perhaps provided by the birth-rate, an understanding of whose movements also requires account to be taken of psychological considerations. Indeed the birth-rate, together with the rates of the psychosomatic affections, would seem to provide a valuable index of the psychological health of a community (Halliday 1945a). Adopting this suggestion we might conjecture that the increase in the incidence-rates of the psychosomatic affections began contemporaneously with the decline in the birth-rate—i.e., round about 1870—as if at this period the operative effect of a growing noxious psychosocial environment were beginning to be revealed in vital statistics. That this date does represent a critical point in social history is the opinion of Trevelyan (1944).

"One of the difficulties of an attempt to write the social as distinct from the political history of the nation is the absence of determining events and positive dates by which the course of things can be charted. The social customs of men and women and their economic circumstances, particularly in modern times, are always in movement, but they never change completely or all at once. The old overlaps the new so much that it is often a question whether to ascribe some tendency in thought or practice to one generation or the next. But on the whole the most marked changes of tendency in Victorian England may be ascribed to the later 'sixties and 'seventies."

The period 1860–70 also marked a definite change of tendency in the field of economics. According to Stark (1944) the year 1871 saw the climax in the evolution of "economic individualism." After this date "individual freedom in economic life became increasingly subjected to social limitations such as tariffs (to protect farmers), cartels (to protect manufacturers), and trade unions (to protect workers)."

It is therefore possible though by no means certain that the upward trend in the psychosomatic affections in Britain may have begun, or at least was under way, in the later '60's and '70's. With the quickening pace in "the course of things" during the 20th century, the rise became discernible in official statistics of morbidity and mortality, but it was not until after the first world war that certain of the affections—e.g., duodenal ulcer and the bodily disturbances of anxiety states—assumed almost epidemic form.

Epidemiological Approach

An epidemiological interpretation of the prevalence of any disease must take account of its ætiology. What is known of the biological ætiology of those psychosomatic organic diseases that show a rising frequency? In the ætiological field of the person a relevant characteristic is the presence of well-marked obsessional trends, the predisposition to these compulsive performances in daily routine being determined by excessive frustration of emotional development during the pregenital phases of early life.

Another relevant personality characteristic is a positive family history either of the same or of an associated affection. This does not necessarily imply that these disorders are genetically inherited, as the finding might equally be determined by the psychological influences of the parent on the child, inducing correspondences of function and dysfunction. Irrespective of these considerations, a rising incidence within the space of one or two generations could not be attributed to changes in the genetic inheritance unless there had been a concomitant alteration in British racial stock.

In the ætiological field of environment relevant precipitating factors are upsetting events or a disturbing life situation. When therefore we find, after due statistical correction has been made, that the incidence of certain psychosomatic affections is increasing, we should expect as a reasonable inference from our ætiological knowledge that this could be attributed to (1) an *increase in predisposition* associated with changes in the milieu of infancy, and/or (2) an *increase in precipitating situations* associated with changes in the milieu of adulthood.

The changes in the milieu of infancy inducing increased predisposition would require to be of a kind that increasingly frustrated, both extensively and intensively, emotional development in the pregenital phases. As a corollary each succeeding generation of adults would be both somatically more sensitive to emotionally disturbing events and in their personality types more "obsessional" than their parents. The changes in the milieu of adulthood inducing an increase of precipitating situations would require to be of a kind that increasingly provoked, both extensively and intensively, disturbing emotional reactions, such as anxiety, insecurity, exasperation, resentment, and isolation.

* It has been lightly said that "all diseases are psychosomatic," but assuredly all diseases are not *psychosomatic affections*. These disorders show a number of interesting characteristics that distinguish them from illnesses in other broad ætiological categories, such as the infectious diseases, injuries, disorders of nutrition, &c., in virtue of which they may be said to possess a common form (Halliday 1943b). Moreover, the incidence-rates of the affections provide indexes of the *psychological health* of a community (as contrasted with its *physical health*) and provide information relating to such matters as group morale, the degree of communal frustration, and changes in the "personality type" brought about by changes in the social environment (Halliday 1945c).

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Any such changes, whether in childhood or adulthood, would moreover require to affect significantly "the masses"—i.e., the labouring and artisan classes—who compose by far the greater proportion of the population and thereby "dominate" the major trends of the vital statistics of a nation.

The question arises therefore: Did the significant changes, theoretically required by inference from ætiological findings, actually take place in "the child world" and/or in "the adult world" of the masses between the end of the 19th century and the outbreak of the war 1939–45? To obtain an appropriate answer, the changes in the environment of infancy and of adulthood must be viewed, not primarily in terms of their physical, chemical, or micro-organic effects, but in terms of their *psycho-physiological* effects.

Changes in the World of the Child

MILIEU OF INFANCY IN '60'S OF 19TH CENTURY

Breast-feeding was universal, or almost so. In cases of difficulty wet-nurses were used. They were readily available, as one infant out of about five died before reaching its first birthday. (The feeding-bottle, known in England since the previous century, was used only by the wealthier classes. Teats were either real calves' teats preserved in spirit or were made of wash-leather or parchment, the artificial nipple being attached by thread to the neck of the bottle. Nothing was known about sterilisation, and the mortality among bottle-fed infants must have been considerable. Not until the supply of rubber became more plentiful towards the end of the 19th century did the feeding-bottle become popular among the working classes.) No special attention was paid to the times of breast-feeding, and the occasions of suckling were determined by the desires of the child or the mother. This was facilitated by the prolonged body contact between them, the baby being carried about by the mother in the folds of a shawl or plaid. A wooden-wheeled baby-carriage was the prerogative of the wealthy but was too expensive for the working classes. Its usage was condemned by the doctors of the period on the ground that it denied to the infant the comfort of strong loving arms—"a baby in arms," they said, "should be a baby in arms." (The modern type of perambulator did not appear until the '80's.) At night the infant might sleep in a wooden rocking cradle, but often it lay alongside its parents or siblings—a practice that, especially if the parents were drunk, which was not rare in those days, often led to its death from "overlaying." (Death from overlaying was not taken too seriously, and the law of the period regarded it merely as an offence and not as a crime.) As for clothing, the infant was "swaddled"—i.e., wrapped in bindings—even sewn up for months at a stretch. Washing of the infant was thought to be dangerous.

Little was attempted in *bowel-training* until the second or third year. Infantile incontinence was of small moment to the generations who, before the introduction of water sanitation, possessed an easy-going tolerance of fæcal smells. Why worry? The child, given time, would naturally develop control of the sphincters and discover for itself the advantages and delights of its own unaided accomplishment. Floors were either of stone or bare boarding, carpets being scarce and linoleum unknown. Furnishings were few but substantial, a deal table and a few wooden stools or chairs, apart from a straw bed, often comprising the total plenishings. The toddler had therefore a good deal of freedom not only to defæcate at its pleasure and leisure but also to explore and manipulate objects.

The *size of the family* was large, children were plentiful, and juvenile nurses and playmates abounded. Toys were simple and few, and toddlers found natural pleasure in amusing themselves; hence early social impulses found a ready fulfilment. Adults made little fuss of children, who were neither expected nor encouraged to express themselves as "young persons." Children, it was said, should be seen but not heard.

There was no compulsory *education*, and schooling cost money. In certain industrial districts half of the children of our "modern school age" were unable to read. Instead of being sent to school, many children were sent to work. (The employment of children under 9 years of age had been prohibited by an Act of 1833, which, however, was not enforced.) Even in the '60's children aged 9–13 could still be employed legally for 48 hours a week.

The *structure of the family* was patriarchal. Father dominated both mother and children, to whom he issued his fiats and upon whom he freely expressed his moods. The God of the period was modelled upon Father—someone terrible, unpredictable, and all-powerful. Priests, parsons, and preachers threatened young children with the fires of Hell. Not till the end of the century, when the patriarchal set-up was beginning to loosen, did a less sadistic deity emerge, the angry Fire God in heaven becoming replaced by the gentler "Friend for little children above the bright blue sky."

Comment.—Viewed physiologically, the child's environment was appallingly bad. Dirt, absence of pure water-supply and adequate sanitation, overcrowding, bad housing, poverty, malnutrition, and long working hours all contributed to tragically high rates of bodily impairment and death. Viewed psychologically, however, the child's environment was not so bad, in that during the early years emotional growth was largely permitted to develop and unfold in its own way and at its "own good time." The vital drives of the oral and aggressive phases therefore obtained a fair degree of outward expression, and it may be surmised that those physiological dysfunctions and tensional states associated with emotionally induced "imbalance" of the vegetative nervous system were neither acutely provoked nor unduly prevalent. Not until the third (or genital) phase of infancy does there seem to have been any great frustration of emotional growth, and this took the form of ignoring the child—of seeing him and not hearing him—a custom which, together with the problem of Father, may have a bearing on the apparently high incidence of hysteria in the Victorian era.

MILIEU OF INFANCY IN '30'S OF 20TH CENTURY

When we contrast the milieu of infancy of the recent '30's with that of the '60's, we find it had undergone a change of the profoundest kind during the intervening 70 years. Infants were no longer reared "instinctively" or by natural impulse as modified from district to district in accordance with the traditions of their respective wise old women of the tribe. Instead we find a consciously directed communal effort to rear babies in accordance with the principles of the most up-to-date scientific physical hygiene. The procedure was not confined to the better-off social classes but, as a result of official propaganda and the establishing of child-welfare clinics, was widespread among the masses also. The change represented an entirely new departure in the conditioning of infants. Nothing resembling it is to be found in the previous history of man. It had far-reaching social consequences not only in the cutting down of the previous appallingly high rates of infant mortality and in improving the expectation of life—these effects had been anticipated—but also in modifying the foundations of "personality structure" of the newer generation—an outcome that had not been foreseen.

Breast-feeding was practised only partially. At least half of the infants were on the bottle by the time they were three months old, the proportion receiving artificial feeding being considerably higher in the urban than in the

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rural and remote areas (Department of Health for Scotland 1943). The occasions of feeding in the bottle-fed (and in many of the breast-fed also) were determined not by biological rhythms but by the clock and the time-table. The child's impulse to play at the breast was no longer fulfilled, and dummy teats, so popular earlier in the century "to keep the child quiet," had by now been discarded as unhygienic. Body contact between mother and child was at a minimum. A large proportion of births, especially in urban areas, took place in institutions or hospitals, where the newborn baby was kept segregated in "the infant ward." Shawls and plaids had disappeared as articles of feminine attire, and "the infant in arms" had become "the kid in the pram." The infant slept in a separate cot. Even spiritual contact between mother and child had been reduced. Thus, if the child cried when laid down after its feed, the mother was medically enjoined to leave it alone. This somewhat stern impersonal régime was, however, usually relieved by the daily bath and exercises, which the infant appreciated with joy, very evident to the onlooker.

Bowel-training was not infrequently instituted from the second or third day of extra-uterine life, and when the clock struck certain hours little pots were punctually applied to little botts. Water sanitation was general, and the population had become conscious both of dirt and of fæcal odours. With the introduction of a relatively abundant supply of household furnishings, carpets, bedding, &c., the masses had also become possession-conscious. Women vied with one another in having "a nice house." This ideal conflicted with a free expression of the infantile phase of exploration and destruction. The social instincts of the toddler were also increasingly denied outlet. Many of the new houses were set apart from one another; families were becoming smaller; and playmates were neither so numerous nor available. The child therefore was drawn more and more against the parents, who began to feel they were never let alone, and their continuous reactive prohibitions and admonitions rendered the child inwardly insecure and outwardly "difficult," so long as it was unable to attain to the orderliness, tidiness, punctuality, dutifulness, &c., demanded by the parents as a standard of behaviour.

As young lives were scarcer, children became more noticeable and more precious. Consequently greater attention was paid to them, especially by the parents of *small families* who because of inner feelings of guilt felt they owed everything to the child, whereas, as Gillespie (1942) has pointed out, in the Victorian age children had been instructed that they owed everything to the parents besides God who had created them.

The advent of *automobile traffic* created a new problem for the child. While still learning to walk he had to attempt to obtain a standard of attentive observation and motor coördination—of "traffic sense"—beyond the potentialities of functioning possible at a stage of cortical development which did not permit of the finer degrees of voluntary control.

At the age of four or five every child was despatched daily from the home (usually to the great relief of the mother) to the communal nursery or day school, where within a few years it was competing with its coevals for "stars" or marks at tests or examinations—miniature ordeals which, if the parents had too much identified themselves with their offspring, occasioned in the child much shrinking, anxiety, and even panic.

The *structure of the family* was no longer patriarchal. Not that it had reverted to the matriarchal arrangement of prehistory. Instead, something entirely novel had developed—the attempt to base the family on the parental dyad appearing in the rôle of pals, equals, and comrades. This neutralisation of sex distinction in the parents was reflected in the retiral of Jove-Jehovah with his bolts from heaven and of his counter-image with his furnaces in hell. Even "The Friend for little children" so evident at the turn of the century was becoming dim and ineffective as children began to visualise the bright blue sky as a background for aeroplanes and to learn at school that life could not be maintained beyond the stratosphere.

Comment.—Viewed physiologically, the response to the scientifically improved hygienic environment may be evaluated as good, in that child life showed a much higher rate of survival and of physical integrity, thus laying the foundations for an adulthood distinguished by an improved "physical health." But, viewed psychologically, the infantile milieu was not so good. The oral and allied drives of the first phase of infancy were not adequately lived through or worked out, with the result that the child retained within his being an undue sense of insecurity—in psycho-analytic terms, chronic unexpressed dependency. The drives of the second (or exploratory-aggressive) phase were likewise unduly curtailed from adequate outlet, the child retaining within its being chronic unexpressed resentment and hostility. Some of this unliberated energy became diverted to the formation of obsessional trends; hence, a time-table or robot-like method of living became increasingly prevalent. Weiss and English (1943) summarise certain features of this situation in relation to the American child of 1942 as follows:

> "There has been too little friendliness shown to the child and too much emphasis placed on his gaining control of himself. He is subjected to harsh discipline beginning with the period of bowel training. He is made to feel shame and humiliation if he does not quickly master bowel and bladder control. He is criticised if he does not achieve neatness, cleanliness, punctuality, memory for detail—in short, he is forced to live up to adult standards in all things at a very early age."

The relatively high degree of frustration operating during the two primary phases of infancy had definite psychophysiological repercussions. The "life," instead of being allowed to unfold naturally with the concomitant maturing of bodily order, was subjected to an imposed system of conditioning which prematurely provoked, or predisposed to, bodily disorders by inducing tensional states or dysfunctions in the gastro-intestinal tract, the respiratory system, the cardiovascular system, the voluntary muscular system, &c. The third phase of infancy, however, was probably less frustrated than in the previous century in so far as more notice and attention were given to children; the phallic Father was no longer in fashion, having been replaced at first by Daddy (who was kind) and later by Pop (who was ineffective, even contemptible); and there was less positive indoctrination of the sense of sin and guilt before an all-seeing and almighty God.

DISCUSSION

The foregoing survey of the evidence shows very clearly that the changes in the milieu of infancy, postulated by epidemiological theory as one of the two possible reasons for the rising incidence of psychosomatic organic disease, did in fact take place between 1870 and 1930. These changes, moreover, were of a kind that increasingly frustrated emotional development both intensively and extensively, especially during the first two phases of infantile life. This would have the effect of progressively increasing the proportion of the population with a disposition to physiological dysfunctions and thereby would be associated with increased *somatic* "physiological" susceptibility to emotionally disturbing events in adult life. The evidence suggests, however, that the third (or genital) phase of infancy was becoming progressively less frustrated. This would have the effect of progressively lessening the proportion of the population with a disposition to hysteria and would be associated

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with a lessened "neurological" susceptibility to emotionally disturbing events in adult life.

The changes in the milieu of infancy tending to increase the predisposition to psychosomatic affections could not, however, reveal their full consequences until the children undergoing these frustrating experiences had attained to adult life. In other words, a lag of at least 20–30 years must elapse between the general introduction of a revolution in infant conditioning and the manifestation of its effects in the incidence-rate of psychosomatic affections. Can we say when the revolution in infant conditioning became general in Britain? Unfortunately we cannot. For, as Trevelyan (1944) reminds us, "social customs never change completely or all at once," and no "positive dates" are available to indicate the time and the scope of the introduction of the various alterations in the rearing of infants which undoubtedly took place. It seems likely that the new customs percolated slowly throughout the community, and that the changes did not get under way on a large scale until some time after the turn of the century. Certainly it was not until the war of 1914–18 that the institution of child-welfare clinics became general. It seems reasonable, therefore, to surmise that the changes in the conditioning of infants did not become widespread until after 1920 at least. On this assumption the incidence-rate of the psychosomatic affections could not be fully influenced by the alterations in the milieu of infancy until after 1950 at least. It may therefore be concluded that in so far as changes in the social conditioning of infants have been a factor in the rising incidence-rate of the psychosomatic affections in adults, the full effects in this respect have still to become manifest.

The problem may, however, also be considered from a somewhat different aspect by collating the possible rising incidence of the affections during the late 19th century and their definitely rising incidence during the 20th century with the behaviour of the birth-rate. In Britain the birth-rate was at its maximum round about 1870. Taking the fertility-rate in that year as 100%, by 1900 it had fallen by 25%, and by 1930 by about 60%. Adopting the suggestion that this decline was related to an increase in communal anxiety (Halliday 1945a), we may assume that the generation born about 1870 would respond to the breaking up of the old social order and the increasing uncertainties of the period by becoming mildly anxious, with the result that, when they married (about 1900), they would have fewer offspring than their parents had. The second generation, born in 1900, grew up through war, strikes, financial crises, and mass unemployment, to which they would respond by a still further anxiety, with the result that, when they married (about 1930), there would be still fewer children to provide the third generation, and those that did arrive would be hyper-anxious.

These ideas are illustrated in the following table, in which the letters P and C refer to parent and child, and the plus sign to the degree of morbid anxiety.

Year	*Degree of anxiety*		*Fertility-rate (%)*
1870	P	C+ ..	100
1900	P+	C++ ..	− 25
1930	P++	C+++ ..	− 59
1960	P+++	C? ..	?

The basis of this approach is that anxiety is infectious, and that anxious parents infect their children. On this assumption an increase in group predisposition to psychosomatic illness would therefore be attributed to a general spread of "tension" in the domestic atmosphere. This interpretation provides a useful but probably much over-simplified description of the responses of the growing life to the stresses engendered by rapid alterations in the social pattern.

Changes in the incidence-rates of the psychosomatic affections cannot, however, be interpreted in terms of changes in the world of childhood alone. Consideration must also be paid to changes in the world of the adult.

Changes in the World of the Adult

The world of the adult, so complex in relation to that of the child, cannot be described in terms of a short formulation. Its complexity became even more complex in the years following 1870, and many volumes would be needed to describe the particulars of its expanding elaboration. Fortunately it is not necessary for present purposes to catalogue the alterations in detail. All that is required is to indicate how the drives and impulses of the emotional life of the adult became increasingly disturbed, diverted, frustrated, or distorted in response to the progressively accelerating changes of the psychosocial environment. Nor is it necessary to attempt a quantitative assessment of the importance of each change.

Speaking broadly, and using metaphors for the sake of compression, the following are some of the tendencies discernible.

Increasing Separation from Outward Roots in Mother Earth.—The population became increasingly urban. Whereas in 1860 about 50% of the people lived in rural areas, by the following '30's the proportion was only about 20%. What part this progressive urbanisation per se played we cannot assess, but we may surmise that it increasingly tended to cut off more and more persons from the times and tides of nature which instigate and exercise deep-seated emotional responses. It also cut down opportunity for free muscular exertion in the open spaces and air, and subjected an increasing proportion of the community to regulation of their life in terms of clock-time.

Increasing Disregard of Cosmic and Biological Rhythms.—The growing indifference to seasonal and diurnal rhythms and the increasing dissociation of the individual from the deepest levels of his emotional life were not solely a function of increasing urbanisation but also were influenced by the expansion of "the machine," developments in transport, and the introduction of artificial lighting. The invention and spread of such terms as time-table, day shift and night shift, and piece-work illustrate this tendency. The working rhythms peculiar to each individual were increasingly disregarded and socially disapproved.

Increasing Frustration of Manipulative Creativity.—A feature of the period was the changes in the means and the methods of industry. In 1860 most of the power in industry was produced by human muscles, but by 1930 it was obtained by power-driven machinery. The older "hand-made" article was being replaced by the mass-produced one, and the scope of creative manipulation as a means of emotional expression was becoming more and more limited. Even such satisfaction as was provided by the handling of the machine was denied to many by the epidemics of mass unemployment that were especially severe in the interval between the two world wars. And even more subtly but just as effectively did rationalised restrictions on output (themselves a "neurotic" symptom) operate to frustrate further the worker who still remained in employment. An example of this phenomenon of "man against himself" was the national need for houses for workers, on the one hand, and the formation of "rings" by the manufacturers and the imposition of restrictions on bricklaying by the labour unions, on the other.

Increasing Rapidity of Change in Structure of Society.—This might be described as the "insecurity of the collapsing platform," in that persons knew neither where they stood nor how long they would stand. More technically and concisely it could be described as "disintegration of society." In 1860 the stratification of social classes was still fairly well defined and generally accepted. People

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"knew their place" and understood their standing, and they confidently worked, played, and strutted upon their apparently irrevocably allotted stage. In the years that followed, class warfare emerged. The old order was changing and indeed breaking, but a new order of reintegration had not yet emerged. The symptom of mass unemployment not only denied to the individual the emotional release of manipulative activity but also isolated him from society. Scales of relief admittedly provided him with the partial satisfaction of his basic infantile needs of food, clothing, and shelter; but these satisfactions alone were insufficient for an adult.

The need to be "safe"—whether against the outer threats of occupational loss (or lack of promotion), financial embarrassment, or social disapproval, or against the inner threats arising from frustration of "the life"—came to evoke a style of living regulated by obsessional mechanisms as a defence against ever-growing danger. It was no coincidence, but a manifestation of the trend of things, that Mr. Baldwin in the early '30's offered "safety first" as Britain's new motto, nor that in 1939 the repressed emotional life of the community found relief and even satisfaction on the outbreak of war.

Increase in Standardisation and Repression of Individual Expression.—Standardisation was furthered by the growing mass-production of information, entertainment, clothing, and (more especially) "education." The increasing standardisation of "education" in schools and universities was associated with the octopus growth of the examination system which, concerned mainly with the acquisition of information from books, did not recognise the equally great (and indeed greater) need for educating the emotions—i.e., of life-learning and the development of personality and character. (Teaching implies a human relationship—i.e., a relationship based primarily on the emotions and only secondarily on the intellect—and, as we look back on our own life, we come to realise how the few persons who imparted to us either knowledge or wisdom—even in a strictly technical subject—did so not in virtue of their standardised qualifications and diplomas but of their personalities. The imparting and assimilating of factual information are very necessary but in themselves are inadequate as a substitute for education in living.)

Increasing Absence of Aim and Direction.—Life cannot be comprehended solely in terms of forces operating from behind. It is not only a matter of impulsions a tergo but also of propulsions towards an object, goal, or end in view. Every physician has noticed how the interposition of a fresh aim in life or of a new vision operates favourably by "giving the patient something to live for" and is an important factor in recovery. An important aim in the lives of many vanished with the decline of active religious faith, and its recession took away a meaning and significance from life. One of the natural ends of marriage, at least for women, is to have babies, but with the changes in the course of things this goal conflicted with the security of the husband or the freedom, narcissism, or respectability of the wife. The aim of work is to create; but, whereas the old craftsman saw in visible form the growth of the product of his manipulative activity, the new worker handled only parts and was denied the satisfaction of seeing his endeavours carried through to their completed end. In short, there was a progressive restriction of emotional vision—not only of sight but also of insight. Only perhaps in war-time, and that under inspiring leadership, did the masses regain some sense of purpose, of direction, and of movement towards a clearly envisaged goal.

Comment.—The various tendencies described above might be summarised by saying that between the '70's of the 19th century and the '30's of the 20th century there was a progressive increase of "inner insecurity," which (apart from the influences of altered social conditioning of infants) was a response to the progressive increase in the outer "economic" insecurity in respect of occupation, income, and status of the individual in the social setting; the emotional tensions thus engendered could not be adequately liberated because of the progressive restriction on the creative activities of making and producing "goods" and because of the increasing neglect of innate biological working rhythms; neither could the tensions be canalised in the form of a drive to a good object or goal either in this life or a future one. There was also a progressive recession of the sphere of "the divine," associated with the increase during the period of secularisation of thought—i.e., rationalism. This withdrawal of "God" is far from unimportant in its practical psychological and social effects.

DISCUSSION

This short inventory indicates that the changes in the milieu of adulthood, postulated by epidemiological theory as the second possible reason for the rising incidence of the psychosomatic affections, did take place between 1870 and 1930. Emotionally frustrating influences increased in intensity throughout the period and had the effect of tending to provoke widespread and deep-seated feelings of anxiety, insecurity, helplessness, resentment, and isolation. Of those who were deeply insecure some fell into a chronic condition of dependency and helplessness, looking to the State to become their mother; but others defended themselves against these inner feelings by excessive self-help and compulsive over-independence ("I'm never at rest unless I'm restless," as a patient once said to me. He had a gastric ulcer). Of those who were exasperated, resentful, and hostile, some fell into a chronic condition of whining querulousness, over-irritability, hypochondriasis, or agitatorism; others diverted their unexpressed hostility to the strengthening of obsessional tendencies; and still others diverted this energy into a compulsive drive to relentlessly unremitting work directed towards attaining (or maintaining) positions of power and authority. The general ebbing tide of natural emotional expression was attended by the appearance of what one of my friends has called (but not quite appropriately) "the most moral generation that ever was." He recalled how observers who had remembered the "loose licentious soldiery" of the Boer War (1889–1902) saw the beginnings of this increasing restraint in the men of the war 1914–18 and were amazed at the relative orderliness, sobriety, subduedness, and chastity of their sons in the war of 1939–45. This growth of "respectability" may be collated with the psychiatric findings that, whereas in 1914–18 hysteria was common among "other ranks" and anxiety states among officers, in 1939–45 hysteria was less often observed, anxiety states were even more prevalent, and reactive depressions showed a relatively greatly increased incidence. (See *British Medical Journal* 1945.)

The growing sense of social insecurity that provoked the need for reassurance was probably responsible for the extraordinary increase in smoking during the period. In 1850 the average consumption of tobacco per head each year in Britain was $^1/_4$ lb., but by 1940 it had risen to 4 lb. per head. This does not necessarily imply that insecurity was exactly 16 times as great. Another symptom of growing insecurity was the rapidly expanding popularity and consumption of patent medicines, and still another was the spread of magazines devoted to such subjects as vigour, personal health, and personal psychology.

Further Epidemiological Interpretations

The adoption of the psychophysiological viewpoint throws light not only on the rising trend of the psychosomatic affections but also on their other statistical features. Illustrations of its usefulness in interpreting

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other features of their incidence in Britain 1900–39 is given below.

Incidence Greater in Urban than in Rural Areas.—The rural milieu was not so instigatory of predisposition during infancy. Thus the proportion of artificially fed babies was, as already noted, much lower than in the cities, and the young growing life was more directly exposed to the emotional influences of Mother Nature. In adulthood the rural milieu allowed more individual self-expression (there are more "characters" in the country); the decline of religious faith was relatively less; intellectualism received little stimulation; and work was more in accordance with diurnal and seasonal rhythms. In short, the older mores prevailed to a greater extent than in the cities. The lower incidence of psychosomatic organic diseases in remote and rural areas may thus be collated with the alleged relative rarity of these diseases in "primitive races"—i.e., communities not influenced by "industrialised western civilisation." Admittedly no adequate statistical data exist for "primitive races," but the impression of many observers that the psychosomatic affections among them are either unknown or rare is in conformity with both ætiological and epidemiological expectation.

Well-marked Differences in Incidence between Various Social Classes and between Various Occupational Groups.—An interpretation of these differences would require to take account of the considerations illustrated in this paper.

Shift in Age-incidence.—With the rise in incidence, the maximal incidence tended to move towards the younger age-groups. This phenomenon is probably related, at least in part, to the increased piling-up of predisposed individuals, an effect resulting from the progressive changes in the social conditioning of infancy.

Shift in Sex-incidence.—The rate of rise (except in diabetes) was greater in males than in females. The changes in the milieu of infancy were the same for both sexes, but psycho-analytic theory suggests the possibility that the male infant, being in a closer and different emotional relationship to the mother, experienced the progressive increase in oral frustration more severely (or at least differently) from the female. But, irrespective of whether we reject or accept this suggestion, the changes in the milieu of adulthood did very clearly affect the two sexes differently. The alterations in the world of women saw the emergency of the "new woman" whose "emancipation," although providing her with access to many new interests and satisfactions, was not attended by the simultaneous withdrawal of the social sanctions which allowed her to retain her moods and modes of feminine behaviour, in virtue of which she continued to be able to liberate her emotional tensions in forms and expressions denied to the male. The influence of social changes on the psychological characteristics and bodily diseases of the female sex is a subject that has not yet been adequately studied.

Peculiarities of Particular Incidence-rates.—An epidemiological interpretation of the incidence-rate of each syndrome or disease would require to relate the "ætiology" of each affection to particular frustrations operating in infancy and particular social stresses operating in adulthood during different periods of historical time and in different social groups.

EPIDEMIOLOGICAL CONCLUSION

The changes which took place between 1870 and 1930 in the child world and in the adult world were demonstrably of a kind that are in accordance with the expectations of ætiological investigation in terms of psychosomatic medicine. This reconciliation of the ætiological conclusions with the facts of the prevalence satisfies "the ætiological principle of the prevalence" (Halliday 1943a). It may therefore be concluded that our notion of the causation of the psychosomatic affections has a correspondence with reality.

CLINICAL NOTE

Clinical experience suggests that, when early acquired predisposition is clearly marked, somatic illness may be precipitated in adult life by an external event so trivial in the objective sense that it may be regarded as the equivalent of the straw that broke the camel's back. In such instances the sickness appears in the nature of a "personality disorder" or, as it used to be called, a "disease of the constitution." If, however, early acquired predisposition is not so marked, somatic breakdown may not occur unless or until the life situation becomes very acutely upsetting, repeatedly disturbing, or chronically oppressive. In such instances the illness appears more in the nature of a reactive process—i.e., as a mode of response of "the life" to a readily recognisable environmental factor or set of circumstances.

General Discussion

Epidemiology, which takes account of the times and places of incidence, was founded and formulated mainly upon experience gained by the study of infectious diseases, but its use as a framework of interpretation is equally applicable to many modes of morbid behaviour that are manifestations of disturbances of emotional development—i.e., of "life" viewed psychologically, psychosomatically, and psychosocially. These modes of behaviour are by no means confined to the psychosomatic affections. Another example is the falling birth-rate, whose decline has interesting epidemiological correspondences with the rising incidence of the psychosomatic organic diseases (Halliday 1945a). Others of particular medical interest are poor working capacity, morale, delinquency, and crime. And others, often (but erroneously) supposed to be of no medical interest whatsoever, include the happenings and trends in art, literature, industry, economics, administration, religion, and international relationships. This extended usefulness of the allied disciplines of ætiology and epidemiology can, however, only be indicated and then immediately dismissed in a communication whose primary concern is the problem of the psychosomatic affections.

GUIDANCE FOR ACTION

The scope of the paper being limited to epidemiological considerations, only a superficial glance can be given to the guidance for action that it suggests; but it may be noted how the problem of preventing a high incidence of these diseases must depend on our ability to change either the "causal characteristics" of the persons comprising the group or the "causal factors" of the social environment, or both. The personality characteristics ætiologically relevant to the psychosomatic organic affections cannot, unfortunately, be altered by any simple form of mass prophylactic injection as in the infectious diseases. Also, because of the weight of numbers involved, it is clearly not feasible, even if it were possible, to alter the emotional "susceptibility" of the group by psychotherapy of individuals. An approach to the problem in terms of "life changing" (to use an expression of the evangelising Oxford Group), though theoretically sound, has therefore only a limited practical application for the purposes of prevention. We are therefore left with the alternative of changing those psychosocial aspects of communal life which investigation demonstrates to be "causal." Thanks mainly to psycho-analytic research, a considerable amount of knowledge now exists in respect of noxious influences operating during the earliest years. We know now that child welfare is a matter not only of applied hygiene and nutrition but also of applied psychophysiology. We know too that education is a problem not merely of instruction but also of securing personality development. Much is also known about the harmful effects of factors in adult life, such as mass unemployment, lack of housing,

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financial instability, and uncertainty of status in society, besides the absence of facilities for social contacts, recreation, and cultural activities. Recognition is also being accorded to the therapeutic implications of teleological ætiology—i.e., that the acquisition by a population of a vision, an end in view, can counterbalance many of the effects of frustrating psychosocial circumstances that are not immediately remediable.

These are some broad principles (by no means an exhaustive account) that can be regarded as well founded. But, generally speaking, much further investigation is still needed to obtain truly scientific guidance for appropriate and deliberate widespread interference with social customs, institutions, and natural evolutionary trends. A practical solution of the many problems of "the structure of society" may require not decades but generations.

A third and somewhat curious prescription has been suggested for "our present discontents." Unfortunately it is not based upon scientific ætiology but is a manifestation of psychopathology. Its plan is to scrap the whole modern industrial set-up and return to a pre-industrialised form of society. This was seriously put forward as a line of action some years ago by Gandhi in India and also found favour in the Irish Free State. Life, however, is set on a one-directional time-track. Neither in the individual nor in the group can it turn back, and in times of difficulty the impulse to "regress" may be attended by phantasy notions leading into even greater difficulty those who attempt to bring them into practice. For the road of life winds uphill all the way and it does so, as the poetess added, "to the very end."

IMPORTANCE OF PSYCHOSOMATIC MEDICINE TO PREVENTIVE AND SOCIAL MEDICINE

The growth of the industrial revolution in the 18th and 19th centuries was associated with medical consequences which no-one had foreseen and whose tragic nature was only slowly appreciated. The concomitant and increasing overcrowding associated with the influx of the population into towns, the dirt, squalor, lack of sanitation, long working hours, &c., were attended by a great increase in mortality (especially from infectious diseases), a low expectation of life, and much physical impairment. The problem was first tackled empirically by sanitarians, many of whom were laymen; but gradually, with the appearance and development of the new technique of bacteriology, insight was provided into why certain diseases happened or broke out as and when they did. The discovery and application of appropriate techniques, the introduction of vital statistics, and the development of sounder ætiological and epidemiological concepts all served to provide an ever-improving guidance for action in terms of demonstrable "causes"; hence preventive medicine gradually became a distinct branch of knowledge in its own right.

In the 20th century, advances in biochemistry and its application to animals and human beings added a new province (nutrition) to preventive medicine. Before the outbreak of the war 1914–18 it had been established that many deficiency diseases could be prevented, and before the outbreak of the war 1939–45 it was known not only that the provision of milk and meals at schools added to the height, weight, and vigour of schoolchildren, but also that proper feeding of pregnant mothers, both animal and human, apparently reduced the incidence of miscarriages, premature births, and even deaths in early infancy. This new knowledge was demonstrated in practice on a national scale by the experiment imposed upon Britain by the rigidly controlled rationing of food introduced during the war.

Before 1940 there was also a spreading but somewhat vague realisation that "social" factors of the environment were somehow important as causes of inefficiency, unhappiness, and illness, and for the first time the term "social medicine" began to become current. At first this was mainly used as a synonym for preventive medicine in its applications of hygiene, nutrition, and industrial medicine. But, with the growing appreciation of the value of the psychological approach, it is now becoming evident that "social medicine" comprises also that further development of preventive medicine which takes account of the techniques and concepts of psychological, psychosomatic, and psychosocial medicine.

The medical repercussions of the advancing changes in the structure of society resembled the changes attending the industrial revolution in that they were neither foreseen nor was their true nature at first recognised. But their biological consequences were much more serious in that they involved the question of the survival of West European man, whether resident in Europe or in lands across the sea. Some of the problems thus arisen and now confronting modern medicine are indeed urgent. They include (1) the declining birth-rate; (2) the high level of the rates of "incapacity for work" occurring, and even rising, at a time when the "physical health" of the people is steadily improving; (3) the self-destructive tendencies, imposed both from without and within, to limit output and spontaneous creativity; and (4) the still lingering menace of another world war.

Modern medicine in the form of social medicine is now facing its responsibilities in pointing out that such problems exist; that they are of primary importance to the public health; and that their nature cannot be understood nor a truly scientific guidance for action be obtained in the absence of the application of the psychosomatic and allied concepts.

Summary

Changes in the world of the child and of the adult, viewed in respect of their psychophysiological effects, are described in relation to Britain between 1870 and 1930. Corresponding tendencies could be depicted in respect of many other countries of pre-war "western civilisation."

A definite effect of these changes was to increase the proportion of the population showing (1) an undue predisposition to physiological dysfunctions, and (2) obsessional trends in behaviour. A further probable effect was to decrease the proportion of the population showing histrionic personality characteristics.

These consequences are reflected, during the period, in the rising trend of many common psychosomatic affections and in the probable contemporaneous decrease in the incidence of gross hysteria.

The significance of these happenings is discussed, and it is suggested that the phenomena are related to the problems of the working efficiency, psychological health, and even the biological survival of a community.

By adopting the techniques and concepts of psychological, psychosomatic, and psychosocial medicine, preventive medicine is enabled to open up a new province of public health, which may suitably be referred to as that of social medicine.

For valuable criticism and helpful suggestions I am indebted to Dr. A. T. M. Wilson, of the Tavistock Clinic. I also wish to express my obligations to *The Century of Science* by F. Sherwood Taylor, which provided me with ready access to so many fundamental particulars concerning infancy as experienced in Britain in the Victorian era.

REFERENCES

British Medical Journal (1945) i, 913.
Department of Health for Scotland (1943) Infant Mortality in Scotland, Edinburgh.
Gillespie, R. D. (1942) Psychological Effects of War on Citizen and Soldier, London.
Halliday, J. L. (1943a) *Brit. J. med. Psychol.* **19**, 367.
— (1943b) *Lancet*, ii, 692.
— (1945a) *Ibid*, i, 601.
— (1945b) *Psychosom. Med.* **7**, 135.
— (1945c) *Ibid*, p. 240.
Stark, W. (1944) The History of Economics in its Relation to Social Development, London.
Taylor, F. S. (1941) The Century of Science, London.
Trevelyan, G. M. (1944) A Social History of England, London.
Weiss, E., English, O. S. (1943) Psychosomatic Medicine, Philadelphia.

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VARIATION IN THE FEMALE PELVIS

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IT has always been recognised that the shape of the female pelvis varies a great deal. It is therefore not surprising that radiography of the pelvis in the living subject has led to attempts by obstetricians to associate the shape of the pelvis with obstetrical difficulties.

Of such schemes the classification of the pelvis propounded by Caldwell and Moloy (1938) has been accepted with such unanimity by British obstetricians that it now appears in most textbooks and is taught in medical schools. This classification accepts the older division of the pelvis into the flat pelvis, which they rename "platypelloid," and the narrow pelvis, which they rename "anthropoid," with the medium pelvis between these extremes; this last, however, they further divide into the round pelvis, which they name "gynæcoid," and the shield-shaped or scutiform pelvis, which they name "android." Caldwell and Moloy differ from the earlier anatomists in that, except for the flat pelvis, they have coined names which are not merely descriptive of the shape but also have much wider connotations; and in that they do not give numerical criteria by which the classes may be recognised but simply give "type" outlines of their classes. Classification may be a fine weapon in the armament of science, but classification without precise definition is simply the negation of science and can only lead to the multiplication of types (as Caldwell and Moloy have themselves found; they have now reached over 30 types) until every example has a type of its own.

The value of this classification for obstetricians appears to lie in three propositions:

(1) The android pelvis is, as its name implies, a male pelvis; it is caused by some abnormality in sex differentiation and is associated with other male stigmata in the female.
(2) The android pelvis and to some extent the anthropoid pelvis are associated with a narrowing of the outlet of the pelvis, particularly with contraction of the pubic angle.
(3) The android pelvis is associated with difficulty in labour.

These three propositions we believe to be untrue, and we here give evidence in support of our belief.

SEXUAL DIFFERENTIATION OF THE PELVIS

The female pelvis is a compromise; the male pelvis is architecturally designed for its main function of carrying the weight of the trunk; the female pelvis, besides being lighter in bony structure, has been compelled to sacrifice much of its architectural strength in extra width, so that it may also serve the function of a birth canal. It is possible, then, that the form of the pelvis is determined by two groups of genes—one group identical in male and female, and another group sex-controlled and peculiar to the female.

Now, if genetic abnormality is the explanation of the android pelvis, this pelvic shape would be a true pseudohermaphroditism; but pseudohermaphroditism is very rare in *Homo sapiens*, so rare as to be insufficient to explain the 19% of female pelves which Caldwell and Moloy classify as android. Again, as the pelvis is sexually differentiated subsequently to the differentiation of the gonads, the form of the pelvis may be determined by the gonadal hormones; and, if the android pelvis is to be regarded as due to hormonal causes, it would represent an error in development. Here again, it is well known that all such errors in development of the genital organs, from cryptorchidism through hypospadias up to the false hermaphrodite, occur in the male, and it is very unlikely that an error of development so common as the android pelvis should be the only example in the female. Lastly, the form of the pelvis is determined during fœtal life and cannot be regarded as though it were a secondary sex characteristic due to the development of the gonads at puberty.

On all these counts it is difficult to believe that there is any connexion between irregularity of sexual development and the android pelvis. It is not yet possible to furnish a rigid disproof of this theory of the origin of the scutiform pelvis, but it can at least be said that obstetricians who accept the theory hold views on genetics, embryology, and anatomy which would be regarded as unorthodox by the geneticist, the embryologist, and the anatomist. The scutiform pelvis is almost certainly a normal variation of the female pelvis.

TABLE I—PARAMETERS FOR SIX MEASUREMENTS OF THE PELVIS

—	Mean	Standard deviation	Coefficient of variation
Conjugate diameter (mm.) ..	120·97	9·48	7·83
Transverse diameter (mm.)	131·41	7·69	5·85
Posterior sagittal (mm.) ..	43·33	7·50	17·32
Pubosacrococcygeal (mm.) ..	132·91	10·38	7·81
Ischial spines (mm.) ..	104·89	7·92	7·56
Pubic angle (degrees) ..	86·25	6·90	8·00

MEASUREMENT OF THE PELVIS

The evidence in rebuttal of the other two propositions is drawn from the radiographical measurement of 307 women; pelvimetry was done on all primigravidæ presenting themselves for admission to Moreton-in-Marsh District Hospital, and the 307 measurements with which we are dealing are of those who were eventually delivered in the hospital at full term as vertex presentations during the years 1936–43 inclusive.* They

* Part of the cost of this inquiry has been met by a grant from the Medical Research Council.

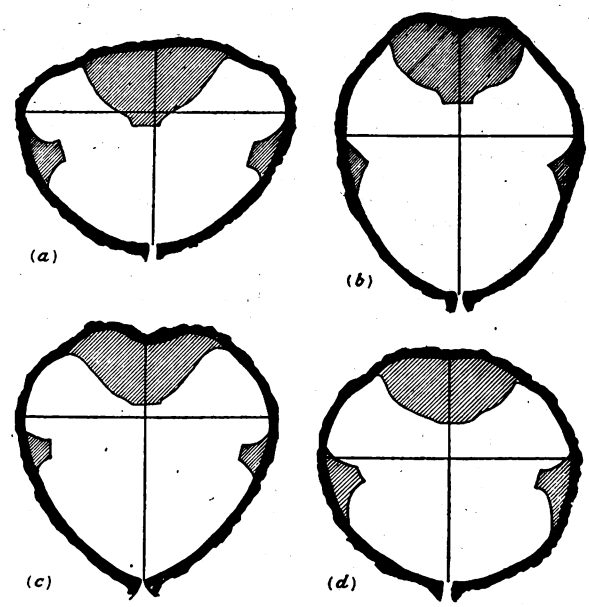

Fig. 1—Four tracings of the brim of pelves from the series of 307:

	Pelvic index	Sagittal index
(a) Flat	77 ...	36
(b) Narrow	114 ...	40
(c) Scutiform	95 ...	28
(d) Round	95 ...	42

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come from all social strata of a predominantly rural population, which has the advantage over the urban population served by a larger hospital in that it tends to be much more homogeneous both with regard to genetic origin and to general nutrition. This homogeneity is of great value in statistical work and has no effect on the conclusions to be drawn; we are indeed dealing with a fair unselected sample from healthy adult Englishwomen.

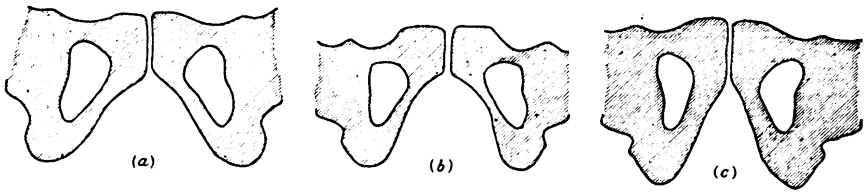

Fig. 3—Tracings of the pubic angle of three pelves: (a) average female angle (85°); (b) contracted female angle (67°); (c) male angle (53°).

The method of radiographic measurement has been published by Nicholson (1943) with an estimate of the error to which it is subject; this error is, if not negligible, at any rate so small as barely to affect statistical estimations based on the measurements. The measurements

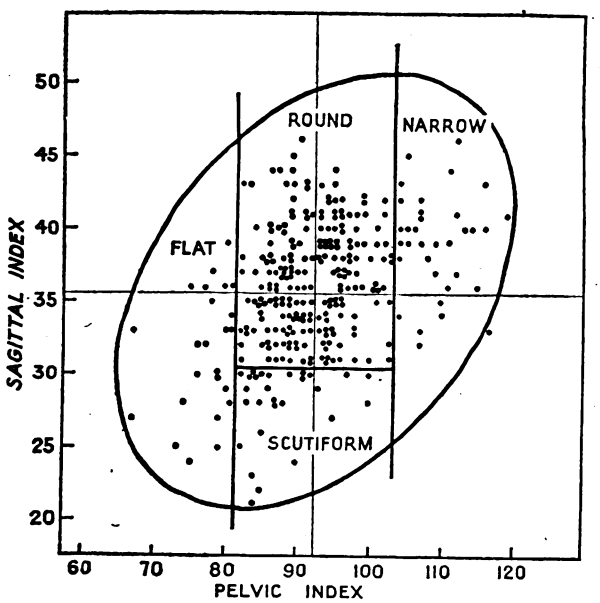

Fig. 2—Scatter diagram of 307 pelves distributed by pelvic and sagittal indices. The ellipse is expected to include 99% of all pelves.

dealt with in the paper quoted are (1) the conjugate (the obstetrical conjugate) and (2) the transverse diameters at the brim; (3) the diameter between the ischial spines and (4) the pubosacrococcygeal diameter at the plane of least pelvic diameter; and (5) the pubic angle. To distinguish between the round and the scutiform pelves a sixth measurement must be added—the posterior sagittal diameter, which is defined as that part of the conjugate diameter between the promontory of the sacrum and the point where it is crossed by the transverse diameter. As with other anatomical measurements, these six are normally distributed and their distribution is defined by the parameters given in table I. In this table it is worth noting that the mean of the conjugate diameter is $^1/_2$-1 in. greater than that given in textbooks of anatomy and obstetrics; it is also interesting to note that the amount of variation in the transverse diameter is much less than in the conjugate or indeed any of the other measurements.

The amount of association between these six measurements is given by the table of coefficients of correlation (table II). Here the slight positive correlation between the conjugate and transverse diameters is very important. It is a common misconception that the pelvis does not vary greatly in size, and that variation in shape is produced by the lateral or anteroposterior compression of a standard-size pelvis. If that were so, there would be a large degree of negative correlation. The positive correlation is proof that the size of the pelvis is even more variable than its shape. Again, there is a considerable degree of correlation between the transverse diameter and that between the ischial spines, showing that the factor which narrows the brim also narrows the plane of least pelvic diameter. Similarly there is a factor which narrows both the pubic angle and the plane of least pelvic diameter. But these are definitely not the same factor, because there is no correlation between the transverse diameter and the pubic angle.

TWO INDICES

From the given figures we can now deduce the parameters for two indices or ratios, and we can predict that these also will be normally distributed. The first is the pelvic index of Sir W. Turner (1886), the percentage ratio of the conjugate to the transverse diameter; this will be low in the flat pelvis and high in the narrow pelvis. The second we may call the sagittal index, the percentage ratio of the posterior sagittal to the conjugate diameter; this will be low in the scutiform pelvis and high in the round pelvis. Fig. 1 shows four pelves from the series to indicate this variation of the two indices. The parameters for these two indices are set out in table III; and, as these parameters are derived from the primary measurements, it would be as well to test whether the distribution of our 307 pelves by the two indices does in fact agree with the normal surface defined by these parameters. This is done in table IV, which shows that agreement is reasonably close.

Now, if the scutiform pelvis is indeed associated with a contracted pubic angle, this should show itself as a high positive correlation between the sagittal index and the angle. Six coefficients of correlation are given in table V, which shows that the flatness or narrowness of the brim is carried down to some small extent into the plane of least pelvic diameter, but that there is no other significant correlation between the shape of the brim and the lower levels of the pelvis. Quite definitely, then, the android and anthropoid pelves are not associated with contraction of the outlet of the pelvis.

TABLE II—CORRELATION COEFFICIENTS BETWEEN THE SIX MEASUREMENTS (ONLY THOSE IN HEAVY TYPE ARE SIGNIFICANT)

—	(1)	(2)	(3)	(4)	(5)	(6)
(1)	..	**+0·1148**	**+0·7466**	**+0·2984**	+0·0616	−0·0430
(2)	**+0·1148**	..	−0·0136	**+0·1822**	**+0·4715**	+0·0007
(3)	**+0·7466**	−0·0136	..	**+0·1285**	+0·0929	−0·0322
(4)	**+0·2984**	**+0·1822**	**+0·1285**	..	**+0·1624**	−0·0893
(5)	+0·0616	**+0·4715**	+0·0929	**+0·1624**	..	**+0·4510**
(6)	−0·0430	+0·0007	−0·0322	−0·0893	**+0·4510**	..

THE SHAPE OF THE PELVIS AND LABOUR

We are now in a position to lay down numerical criteria by which the different types of pelvis may be defined. We propose to call "flat" all pelves with a pelvic index of 81 and under, and "narrow" all pelves with a pelvic index of 104 and over, whatever the sagittal index may be. Of the remainder we propose to call "scutiform" all pelves with a sagittal index of 30 and

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TABLE III—PARAMETERS FOR THE TWO INDICES

—	Mean	Standard deviation	Coefficient of variation
Pelvic index ..	92·32	8·49	9·23
Sagittal index ..	35·68	4·51	12·60

Correlation coefficient +0·4045

under; the rest will be "round." These limits are arbitrary but have not been chosen at random; they have been chosen so that approximately 10% of all pelves will lie in each of the three outlying classes, leaving 70% of round pelves. Fig. 2 is a scatter diagram of our 307 pelves distributed in accordance with the two indices and with these dividing lines drawn. From this diagram it can readily be appreciated why Caldwell and Moloy found their android anthropoid mixed type to be very rare, while the android platypelloid mixed type was comparatively common.

All the 307 patients in the series were delivered in the hospital at full term as vertex presentations; hence again we have a homogeneous population for statistical examination. The labours were classed as "assisted" or "unassisted." Assisted labour is defined as any labour in which there was interference of such a degree as to require a general anæsthetic; this definition must include, besides serious difficulties, all those simple cases where forceps were used to lift or merely to control the head over the perineum. In 188 cases (61%) the women delivered themselves unaided; the remaining 119 (39%) are classed as assisted labour.

TABLE IV—DISTRIBUTION OF 307 PELVES BY PELVIC AND SAGITTAL INDICES FITTED TO THE NORMAL BIVARIATE SURFACE

(Figures in parentheses are expected numbers)

—		Pelvic index 86·5	92·5	97·5	Total
Sagittal index	38·5	8 (8·3)	21 (16·6)	29 (19·8)	34 (36·9)	92 (81·6)
	35·5	16 (14·8)	22 (20·5)	16 (18·8)	18 (22·6)	72 (76·7)
	32·5	18 (20·8)	25 (22·0)	16 (16·6)	10 (15·4)	69 (74·8)
		34 (31·8)	21 (21·3)	12 (12·5)	7 (8·3)	74 (73·9)
Total ..		76 (75·7)	89 (80·4)	73 (67·7)	69 (83·2)	307 (307·0)

$\chi^2 = 10·08$, n = 12, P = 0·61

The test, then, for the association of difficulty in labour with one of the pelvic types is a fourfold χ^2 test. These tests for each of the types are given in table VI. In each case the answer is unequivocal; there is not the least suggestion that any of the types has any influence on the course of labour whatsoever. As a contrast, the same test is carried out for two variables which definitely influence the course of labour—the pubic angle and the weight of the fœtus (tables VII and VIII). Here the answer is equally unequivocal; both of these variables have a profound effect on the course of labour.

TABLE V—CORRELATION COEFFICIENTS BETWEEN THE TWO INDICES AND THREE MEASUREMENTS AT THE OUTLET (ONLY THOSE IN HEAVY TYPE ARE SIGNIFICANT)

—	Pubosacro-coccygeal	Ischial spines	Pubic angle
Pelvic index ..	**+0·1378**	**−0·2686**	−0·0361
Sagittal index ..	−0·0089	+0·1053	−0·0175

DISCUSSION

It seems not a little absurd to expect that radiography could teach us anything really new either about the pelvis or about labour; the function of radiography in obstetrics is surely to give precision, to give a numerical value, to the impressions and estimations of the clinical obstetrician. Our forefathers were indeed painstaking clinicians who could neither put their responsibilities on the shoulders of the radiologist nor sidestep their difficulties by a cæsarean operation. In 1894 Herman, whose work is still published and read (Oldfield 1920), said: "The common kinds of slight deformity are the *flat pelvis* and the *generally contracted*, or, as I shall call it, the *small round pelvis*." The common factor in these pelves is that the area of the brim is reduced. It is the size and not the shape of the pelvis that matters; and the only information on the brim which the radiologist can supply and the obstetrician use is a value for the available area. It has been shown that this area is, to a close approximation, the area of the ellipse with the length of the transverse and conjugate diameters as its main axes (Nicholson 1939).

TABLE VI—TEST OF EFFECT ON LABOUR OF THE FOUR TYPES OF PELVIS

—	Assisted	Unassisted	Totals	Probability
Flat ..	9	15	24	$\chi^2 = 0·0175$
Remainder ..	110	173	283	P = 0·896
Total ..	119	188	307	
Narrow ..	11	23	34	$\chi^2 = 0·6617$
Remainder ..	108	165	273	P = 0·360
Total ..	119	188	307	
Scutiform ..	13	15	28	$\chi^2 = 0·7629$
Remainder ..	106	173	279	P = 0·387
Total ..	119	188	307	
Round ..	86	135	221	$\chi^2 = 0·0077$
Remainder ..	33	53	86	P = 0·915
Total ..	119	188	307	

Contraction at the outlet of the pelvis leading to interference with labour is always associated with narrowing of the pubic angle, and an accurate value for this angle is information which the radiologist can provide. Fig. 3 shows three tracings from radiograms of this angle. It is at once obvious that narrowing of the angle in the female pelvis is not of the same nature as the narrow male angle; on the contrary, it is produced by an excessive arching of the lower rami of the pubic bones. Now, the architectural function of these rami is to maintain the distance between the weight-bearing surfaces of the acetabula, and it seems reasonable to argue that a common cause of narrowing of the angle must be a weakness of the bones due to malnutrition which, on weight-bearing, permits approximation of the acetabula. It is certain that there is a high degree of correlation between the measurement of the angle and the distance between the heads of the femora. The flat pelvis of true rickets leads to a separation of the femora

TABLE VII—TEST OF EFFECT ON LABOUR OF THE PUBIC ANGLE

—	Assisted	Unassisted	Totals	Probability
Angle under 78° ..	24	9	33	
Angle over 78° ..	95	179	274	$\chi^2 = 17·5606$
Total.. ..	119	188	307	P < 0·001

TABLE VIII—TEST OF EFFECT ON LABOUR OF THE WEIGHT OF THE FŒTUS

—	Assisted	Unassisted	Totals	Probability
Weight over 136 oz.	26	11	37	
Weight under 136 oz.	93	177	270	$\chi^2 = 17·5951$
Total.. ..	119	188	307	P < 0·001

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and a widening of the pubic angle; late rickets, on the other hand, and osteomalacia lead to approximation of the heads of the femora and contraction of the angle. Minor degrees of flattening of the pelvis do arise from defective nutrition apart from frank rickets. It has been shown (Nicholson 1945) that the length of the conjugate is even more susceptible to nutritional defects than the stature; it is then not unreasonable to argue that a great deal of narrowing of the angle is similarly produced later in childhood.

It follows that many of the difficulties of labour are directly due to defects in nutrition, and that, with a general improvement in the dietary of children, we can look forward with confidence to a lessening of one of the dangers of childbirth.

SUMMARY

Statistical proof is adduced to show that the android pelvis of Caldwell and Moloy is associated neither with contraction of the pubic angle nor with difficulty in labour.

It is argued that many of the deformities of the pelvis which lead to difficult labour are due to defective nutrition in childhood.

REFERENCES

Caldwell, W. E., Moloy, H. C. (1938) *Proc. R. Soc. Med.* **32**, 1.
Nicholson, C. (1939) *J. Obstet. Gynaec.* **45**, 950.
— (1943) *Ibid*, **50**, 37.
— (1945) *J. Anat.* **79**, 131.
Oldfield, C. (1920) Herman's Difficult Labour, London, 6th ed., p. 148.
Turner, W. (1886) Report on the Scientific Results of the Voyage of H.M.S. *Challenger*, London, vol. XVI, p. 47.

MASS IMMUNISATION OF A FORCE IN THE FIELD AGAINST DIPHTHERIA

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THE Army Pathology Advisory Committee recently had under consideration the immunisation of a large field force against diphtheria. In normal conditions this would be done by carrying out a preliminary Schick test and thereafter immunising those who were Schick-positive, using for preference toxoid-antitoxin floccules (T.A.F.), as this antigen is known to cause less reaction than alum-precipitated toxoid (A.P.T.) or simple formolised toxoid. In the existing circumstances it was not a practical proposition to Schick-test the force, and the only antigen available in sufficient quantity was A.P.T. It was therefore decided to carry out a limited trial to determine if it was possible to eliminate those likely to develop severe reactions by observing the results of an initial dose of 0·01 c.cm. of A.P.T., and excluding from further immunisation any who showed an excessive response thereto. Such a scheme recommended itself because it is known that the majority of those who react to the diphtheria antigens belong to the Schick-negative category: Schick-positives normally show little reaction.

Volunteers were obtained from among the inmates of a convalescent depot. This unit was chosen partly because the facilities for carrying out the test and making careful observations were good and partly because the volunteers, drawn from a vast number of different units, constitute a representative cross-section of the Army as a whole. Schick-testing material and A.P.T. (diluted 1/20 and of normal strength) were supplied by the courtesy of the Wellcome Physiological Laboratories. Inoculations were carried out, and readings made, by me with the assistance of Major C. E. van Rooyen, R.A.M.C., and Captain A. R. T. Lundie, R.A.M.C. Assistance in the initial inoculations was also given by Major W. G. McDougal, R.A.M.C., and Major J. L. Cowan, R.A.M.C., and Colonel J. C. Sproule, C.B.E., helped in reading the results.

TABLE I—COMBINED SCHICK AND A.P.T. SUBCUTANEOUS TEST

Schick result	Reaction to 0·01 c.cm. of A.P.T.			
	(1) No obvious reaction	(2) Tenderness without redness or swelling	(3) Visible reaction (redness, swelling, tenderness)	(4) Total
Schick-negative ..	41	22	4	67
Schick-negative plus pseudo-reaction..	1	4	16	21
Schick-positive plus pseudo-reaction..	..	..	4	4
Schick-positive ..	24	12	3	39

The procedure followed was to inject 0·2 c.cm. of A.P.T. diluted 1/20 (equivalent to 0·01 c.cm. of "neat" A.P.T.) subcutaneously over the insertion of the deltoid in the right arm. Simultaneously a Schick test was carried out on the left forearm, and a Schick control on the right forearm. Close observation was maintained for 48 hours, and results were read and recorded after 24, 48, and 120 hours. All who showed a visible reaction to the dilute A.P.T. were excluded from the further stages of the experiment; the remainder were given 0·2 c.cm. of "neat" A.P.T. subcutaneously over the insertion of the left deltoid on the 7th day, results being read 24 and 48 hours later.

PRELIMINARY TEST

The results of the preliminary test, which consisted of a combined Schick test and subcutaneous inoculation of 0·01 c.cm. of A.P.T. (diluted to a volume of 0·2 c.cm.) are given in table I, and show that, out of a total of 131, 88 (67·2%) were Schick-negative and 43 (32·8%) Schick-positive.* The more severe reactions (col. 3) amounted to 27 (20·6%), and 20 out of the 27 were associated with pseudo-reactions, the majority (16) in the Schick-negative group. Of the 27 visible reactions, 20 (15·3%) were in the Schick-negative group and 7 (5·3%) in the Schick-positive group. The cases recorded in col. 2 showed no visible evidence of reaction, but the patients complained of tenderness when the arm was handled. The degree varied considerably. In many it was obviously genuine; in some its existence was doubtful. It was felt that the personal factor played a considerable part in these cases, and assessment in some was difficult and uncertain.

TABLE II—REACTION TO 0·2 C.CM. A.P.T.

—	Result of preliminary test	Total cases	Reaction to 0·2 c.cm. A.P.T.					
			A	B	C	D	E	F
Schick-negative	N.R.	38	..	4	8	12	6	8
	T.	21	..	4	8	6	2	1
Schick-negative plus pseudo-reaction	N.R.	1	..	1	..	..	..	..
	T.	3	..	1	2	..	..	..
Schick-positive	N.R.	24	..	..	3	3	8	10
	T.	11	..	3	4	3	..	1

A, general reaction only; B, general (temp. of 100° F or over) and severe local reaction; C, severe local reaction; D, moderate local reaction; E, mild local reaction; F, nil; N.R., no obvious reaction; T., tenderness without redness or swelling.

RESULTS OF INOCULATION WITH 0·2 C.CM. A.P.T.

For the second part of the experiment all those in col. 3 were eliminated. Certain defections occurred in the other groups. The numbers injected with 0·2 c.cm. of A.P.T., together with the results, are shown in table II. The results were assessed according to agreed standards by me, Colonel Sproule, and Major van Rooyen, who together inspected each case and agreed on the category. In those classified as severe local reaction, an area the

* It is realised that these and other percentages quoted in this paper are subject to considerable sampling variation. This does not, however, affect the conclusions which are reached.

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size of the palm of the hand or larger was involved, being red, swollen, and tender. Axillary tenderness was present in some of these cases. Many, classified as C and D, had an evening temperature between 99° and 100° F.

DISCUSSION

Taking this group as a representative cross-section of the Army, 67·2% are immune.

The elimination of those who give a visible reaction to 0·01 c.cm. of A.P.T. (table I, col. 3) cuts out 5·3% of Schick-positives and 15·3% of Schick-negatives. By immunising the remainder and assuming 100% success,

TABLE III—SCHICK REACTION IN RELATION TO YEARS OF SERVICE

—	Totals	Years of service							
		1	2	3	4	5	6	7	Over 7
Cases investigated	128	11	16	14	13	11	41	10	12
Schick-positive ..	37	3	7	5	1	3	12	2	4
Schick-positive (%)	28·9	27·3	43·8	35·7	7·7	27·3	29·2	20·0	33·3
Schick-positive (%) in groups ..	..	36·6			24·6			27·3	

the percentage of immunes will be raised to 94·7%. This will be done at an expense of approximately 15% of general and severe local reactions, plus 20% of severe local reactions. Of these, about 8·5% will be in Schick-positives, which may be regarded as justifiable, and about 21·5% will be in Schick-negatives, in whom the procedure is entirely unnecessary. To translate these figures into terms of an army of 100,000, and working to approximate round figures, 20,000 will be rejected as the result of the preliminary test. Of the remaining 80,000 who are inoculated with 0·2 c.cm. of A.P.T., 30,000 are liable to have reactions of the type labelled severe. Of these, 8500 will be Schick-positives, and 21,500 Schick-negatives who stand to gain nothing thereby.

If it be decided also to eliminate those in col. 2, this will cut out a further 9·2% of Schick-positives and 19·7% of Schick-negatives. Assuming 100% success in immunisation, the immunity-rate of the community will then be raised to 85·5%. This will be done at the expense of 2·3% of severe reactions in Schick-positives and 10% of severe reactions in Schick-negatives. Expressed in terms of an army of 100,000 the immunity-rate will be raised from 67·2% to 85·5% (assuming 100% success) at the expense of 2300 severe reactions in Schick-positives and 10,000 severe reactions in Schick-negatives.

It must not be overlooked that this test was carried out by experienced workers under ideal conditions for asepsis, careful observation of results, aftercare of cases with severe reactions, &c. Such conditions could rarely be reproduced in the field, and in inoculating large numbers under field conditions a considerable increase in the number of severe reactions, together with occasional cases of septic arm, must be anticipated. Further, there is the by no means remote possibility of cases with late nervous symptoms—deltoid paralysis, &c.—such as are occasional sequelæ of severe reactions from the injection of foreign protein.

In estimating the increase in immunes, it was assumed that the procedure adopted would be 100% successful. This is not at all certain where an adult population is concerned. It is generally accepted that natural immunity to diphtheria, as shown by a negative Schick reaction, is acquired by repeated exposure to subinfective doses of diphtheria bacilli, and for this reason urban communities show a relatively higher immunity-rate than do rural communities. In the Army opportunities for acquiring immunity through natural channels must approximate to those in urban communities, and it is of interest to analyse the Schick reaction in terms of years of service. This is done in table III, but unfortunately the samples are too small to give a steady curve. The general trend, however, suggests that a certain amount of natural immunisation takes place in the first years of service, but that after 3 or 4 years the position becomes stabilised. Whether the injection of toxoid will produce lasting immunity in adults in whom natural methods have failed is a point which calls for further investigation.

It is considered that, in the case of a force living under active-service conditions, mass immunisation with A.P.T., without previous Schick-testing, is likely to cause more harm than good, and the amount of disability inflicted on those who can in no way benefit from it cannot be lightly disregarded.

The approach to the diphtheria problem in the Army seems rather to lie in the immunisation of entrants shortly after enlistment. While in the training centres under conditions which permit of adequate control and aftercare, recruits can be Schick-tested to exclude those who are already immune as well as those who, by the development of a pseudo reaction, show undue susceptibility to the action of the prophylactic. Thereafter Schick-positives can be immunised, and in such circumstances, judging from experience of the procedure in probationer nurses of a more or less similar age-group, reactions are likely to be of minor importance.

SUMMARY AND CONCLUSIONS

1. Schick-testing a field force under active-service conditions, as a preliminary to immunising against diphtheria, is not a practical proposition.

2. An attempt has been made to assess the value of a small dose—0·01 c.cm.—of A.P.T. given subcutaneously as a screening test to exclude those likely to react severely to immunising doses of this prophylactic.

3. This did not achieve its purpose, and left undetected a considerable number of reactors. The majority of these were Schick-negatives, with nothing to gain from immunisation.

4. Mass immunisation with A.P.T. without previous Schick-testing is considered to be unjustifiable.

5. Schick-testing of recruits on enlistment, followed by the immunisation of susceptibles, is considered to be the solution of the Army problem.

ERYSIPELOID

SURVEY OF 115 CASES

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THE material for this survey has been obtained from 115 unselected cases of erysipeloid out of 2300 cases of all types seen in the septic hand clinic at Charing Cross Hospital from its inception in May, 1941, until the end of December, 1945.

Erysipeloid is better known to dermatologists than to surgeons. Morrant Baker first described it in 1873, and called it erythema serpens. In 1884 Rosenbach renamed it erysipeloid. The older writers also called it erythema migrans and chronic erysipelas, and it is sometimes known as fish-handler's disease. It is by no means uncommon, since it occurred in 5% of the septic hands at our clinic, and it is almost restricted to people connected with catering, thus being an occupational disease.

The causal organism is the gram-positive bacillus *Erysipelothrix rhusiopathiæ* (Topley and Wilson 1940), which causes erysipelas in pigs. This organism was first described by Rosenbach (1887, 1909). Verge's (1933) opinion is that, besides a cutaneous form, erysipeloid may be intestinal and general. Klauder et al. (1943) published a case in which death was due to septicæmia

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and acute bacterial endocarditis, but this is rare. The cutaneous form is by far the commonest.

SOURCES OF INFECTION

Infection by *Ery. rhusiopathiæ* results from contact with organic matter, usually mammals, fish, shellfish, bones, flesh, or shells; but vegetable material and indeed any form of nitrogenous product can also be a source of the organism. In the present series of 115 cases infection arose from the following sources:

Source	Cases	Source	Cases
Fish	29 (25·2%)	Thorn	3 (2·6%)
Poultry ..	24 (20·9%)	Dog-bite ..	1 (0·6%)
Meat	22 (19·6%)	Insect-bite ..	1 (0·6%)
Shellfish ..	8 (7·0%)	Unknown ..	23 (20·0%)
Wood splinter..	4 (3·5%)		

In most cases the lesion was caused through puncture of the skin by bone, scales, or shells of crustacea. A few were derived from cuts inflicted by knives used for cutting meat. An insect-bite and a dog-bite accounted for 1 case each. Puncture of the skin by thorns gave rise to 3 cases, all of which occurred in persons unconnected with catering: a fireman, a law clerk, and an usher. It is to be presumed that infection arose because either (1) the thorn in each case was primarily infected, or (2) the skin abrasion came into contact with some contaminated animal material later. Wood splinters gave rise to 4 cases—in a market porter, a housewife, a miner, and a person of no occupation—and the remarks already made regarding infection hold good for these cases.

The cases in which the source of infection was unknown form 20% of the series; of these 23 cases, 14 were in persons associated with the catering trade (see below). Klauder (1926) stated that infection could invariably be traced to contact with animals, fish, shellfish, dead matter of plant or animal origin, or matter derived from animals. There is little doubt that, certainly in the case of those connected with catering, and probably in the case of the others, the exciting factor was covered by his definition. Support is given to this view by the fact that 85 of the 115 cases were directly attributable to an animal source, and 7 to organic plant matter.

THE LESION

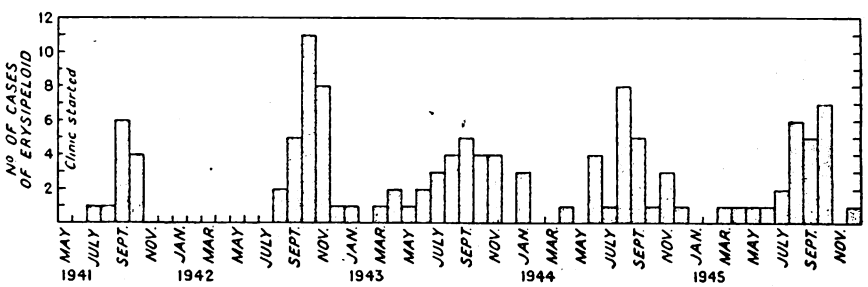
The lesion manifests itself from two to seven days after the initial injury, which may be a cut, scratch, or puncture of the skin. It is characterised by a dark purple-red zone, sharply defined and somewhat raised, in the centre of which the site of the injury is often found healed. It usually occurs on the fingers, and from about the third to the fifth day the lesion extends peripherally, the change being most noticeable towards the upper part of its distribution. After about a week the central part of the rash fades and desquamates, while the periphery continues to extend. It is common for the spread to reach (1) the palm or dorsum of the hand, (2) the neighbouring webs, (3) the adjacent sides of the neighbouring fingers, and (4) the proximal phalanges of the neighbouring fingers. The lesion appears to be commoner on the middle fingers and the thumb, particularly of the right hand.

The rash is accompanied by a sensation of heat, burning, and irritation of the part, which may become considerably swollen, giving rise to a feeling of local tightness. Stiffness of the interphalangeal joints is common, with resulting limitation of movement. Pain is common, especially in the early stages, and becomes worse where the lesion extends, while at the same time easing centrally. It is described variously as throbbing, burning, or smarting. Sometimes there is subcuticular extravasation of blood.

General symptoms are inconstant, though a few patients have sickness and nausea. There is no rise of temperature. Regional lymphangitis and lymphadenitis may develop but are not common. Of the 115 cases only 5 showed lymphangitis, and only 2 localised adenitis, the epitrochlear gland being affected in both cases, and the axillary glands in one. Arthritis of the interphalangeal joints is not unusual and may lead to articular stiffness.

Erysipeloid is characterised by regressions and relapses; for a few days the lesion appears to regress, only to flare up and extend after some days or even weeks. Relapses may occur after apparent cure.

The average duration of erysipeloid under treatment in this series was 17·4 days, but any time from 14 to 28 days is common. The longest case lasted 51 days; several lasted only 7–10 days. In the latter stages the lesion fades from the periphery inwards.


No. OF CASES OF ERYSIPELOID
Clinic started
12
10
8
6
4
2
MAY JULY SEPT. NOV. JAN. MAR MAY JULY SEPT. NOV. JAN. MAR MAY JULY SEPT. NOV. JAN. MAR MAY JULY SEPT. NOV. JAN. MAR MAY JULY SEPT. NOV.
1941 1942 1943 1944 1945

Monthly incidence of cases of erysipeloid

The lesion must be diagnosed from erysipelas. This should not present much difficulty in view of the dusky colour of the erysipeloid, its slow and limited spread, the absence of vesiculation, and the lack of constitutional disturbance. The history of the initial injury and the patient's occupation may also suggest the diagnosis.

DISTRIBUTION

Season.—It is not known for certain whence the organism comes or how it is transmitted. According to Bierbaum and Gottron (1929) the direct transmission of the disease from pigs with swine erysipelas is not common. Verge (1933) stated that actual infection of fish and crustaceans had not been demonstrated. Topley and Wilson (1940) believe that the organism may lead a saprophytic existence in favourable surroundings. Stefansky and Grunfeld (1930) described an epidemic of erysipeloid at Odessa, where about 200 people were infected who had been handling fresh-water fish brought by sailing ships from the Dnieper and the Bug.

The four and a half years under review here have shown a greater seasonal incidence of erysipeloid during the summer and early autumn (see figure). It is no mere coincidence that the incidence of erysipeloid should rise in the summer and autumn, for it is at those seasons that swine erysipelas is prevalent in this country. Since flies are the vectors of many diseases, it is feasible to suppose that they are also the vectors of *B. erysipelatis suis*, carrying the organism from the fæces of infected pigs or from any contaminated organic material; Klauder et al. (1943) cite Kondo and Sugimura (1935) to the effect that the organism has been recovered from house-flies.

Occupation.—Of the 115 cases, 95 occurred among persons connected with catering, including housewives. The incidence is made up as follows:

Occupation	Cases	Occupation	Cases
Cooks	45 (39·1%)	Butchers ..	3 (2·6%)
Housewives ..	13 (11·7%)	Poulterers ..	3 (2·6%)
Fishmongers ..	5 (4·3%)	Others in catering	26 (22·6%)

It will be seen that the highest incidence falls on cooks,

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and if one considers each housewife as a cook the percentage becomes 50·8. Barmen, waiters, kitchen hands, &c., account for another 22·6%, and fishmongers, poulterers, and butchers for a further 9·5%. Klauder (1938) reported 100 cases, of which 88 were due to occupational infection, principally among butchers and slaughter-house workers.

In the present series, of the 20 cases not connected with the catering trade 6 were infected from an animal source, 6 from a plant source, and in 8 the source was unknown.

Age and Sex.—All age-groups appear to be susceptible to the disease, and the sexes are equally affected. The youngest patient in the series was an apprentice cook aged 14, and the oldest was a male kitchen hand aged 72.

NON-IMMUNITY

Second attacks do occur. Cutler (1942) states that a *relative* immunity exists in man, but that immunity is not conferred by one attack of the disease. Of the present 115 cases, 2 had second attacks. In the first case an infection of the palm of the right hand was followed four months later by infection of the palmar surface of the left thumb. In the second case a lesion on the right index finger was followed eight months later by a lesion on the right thumb. In both of these cases the source of infection was different for each attack.

TREATMENT

The treatment of the condition is medical; surgery has no place in it. The fundamental principle is rest of the affected part, best obtained by putting the patient off work and using a high sling to keep the hand and forearm relatively immobile. Apart from rest, the cases in this series were treated in various ways, and it is instructive to note that in the 4 cases which had no other treatment the lesions lasted for an average of 12·75 days—a figure lower than with any other form of treatment tried.

The accompanying table shows the various treatments given and the average duration of the lesion. For the sake of comparison the results obtained by Barber et al. (1946) with intramuscular penicillin are added.

Treatment	Cases	Av. duration (days)	Treatment	Cases	Av. duration (days)
None	4	12·75	Sulphathiazole cream	2	17·0
Hot Boric fomentations	7	14·0	Kaolin and calamine	7	18·0
Ung. hyd. ammon. dil.	1	14·0	Sulphathiazole cream and glycerin and ichthyol ..	1	24·0
Penicillin cream ..	13	15·0	Sulphathiazole 20 g.	1	33·0
Ung. zinci et picis	1	15·0			
Glycerin and ichthyol ..	14	15·4			
Calamine	8	15·9			
Liq. iodi fort. ..	4	16·0			
Saline soak and kaolin	33	16·2	*Intramuscular penicillin* (Barber et al. 1946)	3	2·0
Brilliant green ..	13	17·0			

It will be noticed that the average duration of the erysipeloid is very much the same whichever treatment (except intramuscular penicillin) was tried. It is striking that results were bad in all the 4 cases treated with sulphathiazole preparations—in fact, the case treated (by his own doctor) with a course of sulphathiazole 20 g. by mouth lasted the longest time. Klauder et al. (1943) and Klauder and Rule (1944) report that erysipeloid does not respond to sulphonamides; but Schoch and Shelmire (1940) report success with sulphanilamide.

Other treatments have been recommended from time to time, such as radiotherapy, 15–20% of an erythema dose being given (Buzello 1935). Serum therapy has its advocates. An immune serum was first prepared in 1898 by Leclainche by inoculating horses with the causal organism. Ritchie (1931) advocated injecting 0·25–0·5 c.cm. round the advancing edge of the lesion. Of Klauder's (1938) 100 cases, 48 were treated with serum in an average dose of 1–2 c.cm. per kg. of body-weight; 18 of these developed serum sickness, and Klauder subsequently gave up using serum, as those developing serum sickness had their period of incapacity prolonged. Cutler (1942) recommends the use of 10–20 c.cm. of serum only in severe or chronic cases, admitting the risk of serum sickness. Because of the risk of serum sickness, serum was not used at this clinic.

Penicillin cream of low concentration was used in 13 cases in the series, and these showed the fair average recovery time of 15 days. Penicillin was not used systemically, being reserved for more deserving cases, but Barber et al. (1946) report an average recovery time of two days in 3 cases treated with systemic penicillin. Except with penicillin, the best and simplest form of treatment for erysipeloid is rest of the part, preferably in a sling, and the application of hot wet boric dressings. Now that penicillin is more plentiful, however, it will probably be used in all but the mildest cases.

SUMMARY

Of 2300 cases attending a septic hand clinic, 115 (5%) were of erysipeloid.

Erysipeloid has a seasonable incidence concurrent with epidemics of swine erysipelas.

Erysipeloid is an occupational disease of the catering trades.

Immunity is not conferred by one attack.

Treatment is entirely medical. Rest of the affected part is of primary importance. Of the various medicaments used, sulphathiazole gave the worst results. Systemic penicillin, which in cases reported by others has led to rapid recovery, was not used.

I am indebted to Mr. R. A. Fitzsimons for permission to publish these cases.

REFERENCES

Baker, W. M. (1873) *St Bart's Hosp. Rep.* **9**, 198.
Barber, M., Nellen, M., Zoob, M. (1946) *Lancet*, **1**, 125.
Bierbaum, K., Gottron, H. (1929) *Derm. Z.* **57**, 5.
Buzello, A. (1935) *Int. Congr. industr. Accidents.*
Cutler, C. W. jun. (1942) The Hand: its Disabilities and Diseases, London.
Klauder, J. V. (1926) *J. Amer. med. Ass.* **86**, 536.
— (1938) *Ibid*, **111**, 1345.
— Kramer, D. W., Nicholas, L. (1943) *Ibid*, **122**, 938.
— Rule, A. M. (1944) *Arch. Derm. Syph.* **49**, 27.
Kondo, S., Sugimura, K. (1935) *J. Jap. Soc. vet. Sci.* **14**, 111.
Ritchie, E. B. (1931) *Arch. Derm. Syph.* **23**, 1069.
Rosenbach, A. J. F. (1884) Mikro-organismen bei den Wund-Infections-Krankheiten des Menschen, Wiesbaden.
— (1887) *Arch. klin. Chir.* **36**, 346.
— (1909) *Z. Hyg. InfektKr.* **63**, 343.
Schoch, A. G., Shelmire, B. (1940) *Arch. Derm. Syph.* **41**, 570.
Stefansky, V. K., Grunfeld, A. A. (1930) *Zbl. Bakt.* **117**, 376.
Topley, W. W. C., Wilson, G. S. (1940) Principles of Bacteriology and Immunity, London.
Verge, J. (1933) *Rev. gén. Méd. vét.* **42**, 65.

" . . . no large nation has nearly succeeded in evoking and using the full potentialities of intelligence, leadership, energy or skill in the mass of its people. This *hitherto undeveloped* reserve forms one of our greatest assets. But we have come to a time when we can no longer afford to allow it to remain idle. The latent qualities must be developed, and once developed, must be distributed and employed to the best advantage. . . . Work which has been done in testing relatively small groups of university and college students provides an indication of the proportion of the population with an intelligence equal to those at the universities and training colleges. This evidence shows that about 2% of the population are at least as intelligent as the upper quarter of the university students and graduates tested, and about 5% are as intelligent as the upper half. The proportion of the population who actually reach the universities at present is rather less than 2%. The result of testing women non-graduate students at teachers' training colleges in Scotland suggests that about 10% of the population are as intelligent as the upper quarter of the students, and about 21% are as intelligent as the upper half."—*Planning* broadsheet no. 253, issued by P.E.P., 16, Queen Anne's Gate, London, S.W.1.

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DIRECT TEST FOR BLOCKING ANTIBODY IN TREATED HAY-FEVER*

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IT was shown by Coca and Grove (1925) and Clarke and Gallagher (1926) that an urticarial reaction developed in normal skin when a mixture of serum of a hay-fever subject and the corresponding allergen was injected. The transferred allergic antibodies (reagins) were believed to have sensitised the normal skin quickly, thus enabling those areas to respond to the allergen. However, other workers (Foran and Lichtenstein 1931, Gay and Chant 1927) reported negative results with this method. The clue to these discrepancies was found by Cooke et al. (1935), Stull and Sherman (1939), and Sherman et al. (1940), who noted that the results depended on whether the sera in those mixtures were obtained from untreated or treated hay-fever subjects. When the sera were taken from untreated patients (A sera) the serum-pollen test in normal skin produced urticarial weals. When, on the other hand, the sera were taken from treated hay-fever subjects (P sera), the serum-pollen tests gave no visible reactions. Further, when the sites were retested forty-eight hours later with pollen, the areas which had reacted before (A sites) were found negative, but those which had given no response (P sites) now reacted.

To explain this, it was assumed that neutralisation of the transferred reagins by pollen took place in the A sites but was prevented in the P sites. This inhibition was believed to be due to the development of a new immune-body, which interfered with the neutralisation of the reagin by the antigen. It was termed "blocking substance," and the method, the principle of which has just been described, became known as the "neutralisation test."

By using heated and unheated sensitive sera, Loveless (1940a) proved the theory of two coexisting antibodies to be right. She demonstrated in a large series of experiments that, unlike reagin, the induced antibody showed no loss of its antigen-binding capacity after being heated to 56° C for as long as five hours, or to 60° C for half to one hour. Thus in the serum of treated pollen-sensitive persons the heat-labile reagin and the more heat-resistant blocking substance coexisted. Furthermore, it was shown that, in contradistinction to the reagin, the blocking antibody, as well as pollen, was removed quickly from the site of the injection. Therefore, after some time, the fixed reagin could cause a reaction if pollen was again introduced.

It seemed of interest to study the development of the blocking antibody in specifically and in non-specifically treated hay-fever patients. Cooke's neutralisation test, however, was not used. Instead of injecting mixtures of isoserum and pollen into non-sensitive skin, the skin of the hay-fever subjects was tested with mixtures of their own serum and pollen. A "direct" blocking test with autoserum was thus worked out with the object of detecting and titrating the inhibiting substance.

SELECTED PATIENTS

Twenty-four allergic subjects who were sensitive to pollen only or to pollen and house-dust were divided into two groups according to the treatment they received.

In *group I* (11 cases) specific desensitisation was carried out. The sensitive subjects received the routine course of 30–50 subdermal 'Pollaccine' injections, ranging from 20 to 100,000 Noon units (N.U.) per c.cm.† Injections were given every second or third day, and the doses were increased by 15–30% at each injection. A total dose of 4000–710,000 N.U. was administered.

In *group II* (13 cases) non-specific desensitisation was attempted by the administration of unpooled human isoserum. The subjects received from three to six intravenous injections of 10–30 c.cm. at intervals of a week. The serum was derived from non-allergic group-A donors and given as individual serum to the allergic recipients irrespective of their blood-group. After pulp and Seitz-filtration it had been kept frozen solid for four months. No serum was administered unless it could be ascertained that the donor had not developed any symptoms of hepatitis during that period. This precaution was taken in the hope of reducing the risk of transferring the agent of homologous serum jaundice.

TECHNIQUE

Before any tests were performed on the hay-fever subject a blood sample was taken (sample A). When treatment was completed a second sample was obtained (sample P). After the blood had clotted at 37° C for 30 min. the samples were centrifuged and the serum was taken off under sterile conditions.

Pollaccine solution was made up to the strength of 2000 N.U. per c.cm. with 0·5% carbol-saline. From that solution eleven serial double dilutions with 0·5% carbol-saline were then made, and the twelve pollaccine dilutions were used for preparing two corresponding sets. The first set of twelve tubes contained the twelve serial dilutions mixed in twelve test-tubes with equal volumes of the serum to be tested (serum A or serum P). The second set contained mixtures of the twelve pollaccine dilutions with equal volumes of carbol-saline. The pollaccine in these mixtures in both corresponding sets thus ranged from 1000 to 0·49 N.U. per c.cm. The tubes were allowed to stand at room temperature for $^1/_2$–1 hour before use.

The injections were carried out, on the day of venepuncture, in the skin of the hay-fever subject from whom the blood had been taken. Duplicate injections of 0·05 c.cm. of each tube were given intradermally into the back, starting with the weakest pollaccine solutions. Care was taken not to increase the pollaccine concentration beyond that giving a +++ reaction, to avoid a general reaction. Control injections of carbol-saline and of carbol-saline and serum in equal quantities were also made.

The titrations in the skin were read at the height of the reaction, usually after 15 min. A slight increase of the weal, with a surrounding erythema, was regarded as +, a weal of 1·5 c.cm. diameter as ++, and a weal of more than 2 c.cm. diameter as +++. The strength of the weakest solution of pollaccine, expressed in units per c.cm., which gave a positive reaction was noted as "the threshold value." The ratio of the threshold value of the pollaccine-serum mixture to that of the pollaccine and carbol-saline mixture was termed the "blocking titre."

RESULTS

Table I shows the results on all patients tested in the two groups. Table II is a typical example of the skin-titration carried out on one subject.

Group I.—Before the course of pollen injections, 10 out of 11 pollen-sensitive subjects showed no blocking substance, and only 1 (case 6) had a blocking antibody of a low titre (4). This patient had received six series of pollen injections in previous years. After treatment the inhibiting substance was demonstrated in the serum of all 11 persons. The blocking titre ranged between 8 and 128, and in the patients observed it was highest in those who had received the largest total dose of pollaccine.

Group II.—Initially the 13 patients in this group, like those in the previous group, showed no blocking sub-

* A report to the Medical Research Council from the South London and Home Counties Blood Supply Depot.
† A Noon unit is the active substance contained in 0·000001 g. of pollen.

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stance. However, the treatment, which consisted here of non-specific injections of human serum, had the contrasting result of not producing a blocking substance.

The skin-sensitivity, as measured by the threshold test, showed only a slight increase, or none, in both groups after treatment.

DISCUSSION

All published experiments on the blocking substance were done by testing the skin of non-allergic persons with mixtures of reaginic isoserum and pollen (Cooke et al. 1935, Stull and Sherman 1939, Harley 1937, Scully and Rackemann 1941, Loveless 1940a and b, Frank and Gelfand 1943). The failure of Cooke and his collaborators to demonstrate the blocking substance in naturally sensitive skin may be attributed to the high test doses of pollen used. Loveless (1940a) achieved it readily, but in her experiments she did not use the skin of naturally sensitive subjects for testing. The "direct" test, as applied in this paper, has some advantage over Cooke's indirect method. First, it was unnecessary to use volunteers for the skin titrations, as the tests were carried out in the patients. Secondly, injection with isoserum, which often produces a weal and erythema readily confused with a pollen reaction, was avoided. Autoserum lacks that property.

TABLE I—RESULTS OF DIRECT BLOCKING TEST IN A AND P SERUM OF POLLEN-SENSITIVE SUBJECTS

Case no.	Previous pollen or serum treatment	Total dose of pollaccine (units per c.cm.)	Threshold (units per c.cm.)*				Blocking titre†	
			A		P			
			Poll. & saline	Poll. & serum	Poll. & saline	Poll. & serum	A	P
GROUP I: SPECIFIC DESENSITISATION WITH POLLACINE								
1	Pollaccine 1944	710,000	0·97	0·97	1·95	125	ND	64
2	Nil	86,000	0·97	0·97	0·97	62·50	0	64
3	Pollaccine 1942, 1943, 1944	100,000	3·90	3·90	3·90	62·50	0	16
4	Nil	210,000	1·95	1·95	3·90	125	0	32
5	Nil	17,500	1·95	1·95	1·95	15·62	0	8
6	Pollaccine for 9 yr	150,000	3·90	3·90	15·62	2000	4	128
7	Nil	4000	31·25	31·25	31·25	250	0	8
8	Nil	120,000	3·90	3·90	3·90	125	0	32
9	Pollaccine for 3 yr	250,000	1·95	1·94	3·90	250	0	62
10	Nil	2500	31·25	31·25	31·25	500	0	8
11	Nil	240,000	0·49	0·49	0·97	15·62	0	16
GROUP II: NON-SPECIFIC INJECTIONS OF ISOSERUM								
		Doses of isoserum (c.cm.)						
1	Nil	4 × 20	3·90	3·90	7·81	7·81	ND	0
2	Nil	4 × 30	0·49	0·49	0·49	0·49	0	ND
3	Nil	2 × 20 2 × 30	0·49	0·49	0·97	0·97	0	0
4	Nil	2 × 30	3·90	3·90	3·90	3·90	ND	0
5	Nil	50 30 50	1·95	1·95	1·95	1·95	0	0
6	Nil	20 30	0·49	0·49	0·97	0·97	0	0
7	Nil	20 30	31·25	31·25	31·25	31·25	0	0
8	Nil	20 30 30	500	500	1000	1000	0	0
9	Nil	10 10	500	500	500	500	0	0
10	Nil	30 30	0·97	0·97	1·95	1·97	0	0
11	Nil	30 30	0·97	0·97	0·97	0·97	0	0
12	Nil	5 × 30	1·95	1·95	3·90	3·90	0	0
13	Nil	6 × 30	125	125	125	125	0	0

* The "threshold" value is the strength of the weakest solution of pollaccine which gave a positive reaction.

† The "blocking titre" is the ratio of the threshold value of the pollaccine-serum mixture to that of the pollaccine and carbol-saline mixture. ND = not done.

TABLE II—TYPICAL RESULTS OF DIRECT BLOCKING TEST IN A AND P SERUM OF A POLLEN-SENSITIVE SUBJECT

Intradermal tests (0·05 c.cm.) with equal amounts of pollaccine and saline; pollaccine and serum A; and pollaccine and serum P. (Pollaccine used in serial dilutions.)

Pollaccine (units per c.cm.)		Feb. 20, 1945, A		June 4, 1945, P		Blocking titre	
Total for treatment 1945	Test dose	Poll. & saline	Poll. & serum A	Poll. & saline	Poll. & serum P	A	P
710,000	0·49	−	−	−	−	0	64
	0·97	+	+	−	−	..	..
	1·95	+	+	+	−	..	..
	3·90	++	++	++	−	..	..
	7·81	++	++	++	−	..	..
	15·62	++	++	++	−	..	..
	31·25	+++	+++	++	−	..	..
	62·50	..	..	+++	−	..	..
	125	..	..	+++	+	..	..

The results in group I confirmed the observation that a blocking substance develops in specifically treated hay-fever subjects, and its relation to the dosage of pollen (Loveless 1943). Whether the induction of an inhibiting substance is the cause of the clinical improvement has not yet been decided. In this small series the titre of the blocking antibody and clinical improvement were parallel.

The results in group II showed the failure to induce an inhibiting antibody in hay-fever subjects treated non-specifically by injections of human isoserum. It may seem surprising to have chosen for immunisation a "homologous" protein. However, there is some reason to believe that autoserum only lacks antigenic properties. In previous experiments (Maunsell 1944) I showed that hay-fever subjects and other persons with a similar type of allergy tended to react to their first transfusion of pooled human serum with an urticarial rash, but that they did not respond in the same way after repeated serum transfusions. This was looked on as a desensitisation. It was hoped that the induced protective mechanism would be directed not only against the reintroduction of human serum but also against the offending allergen—e.g., pollen. Clinical improvement in patients treated in such a way gave further support to that hypothesis. The failure to produce a blocking antibody in hay-fever patients treated with serum need not necessarily mean that the assumption was wrong. It may mean that the stimulation of a blocking antibody is not the only mechanism by which protection can be induced in hay-fever subjects.

SUMMARY

A direct blocking test was worked out with the object of detecting and titrating the blocking antibody of Cooke.

The development of a blocking antibody in the serum of specifically treated hay-fever subjects was confirmed by this method. The blocking titre may be used as a guide for assessing clinical protection.

No blocking antibody was detected in hay-fever subjects treated with non-specific injections of human isoserum.

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I wish to thank Mr. Terence Cawthorne and Miss Edith Whetnall for selecting the patients for this work and for their interest in the investigations.

REFERENCES

Clarke, J. A. jun., Gallagher, M. G. (1926) *J. Immunol.* **12**, 461.
Coca, A. F., Grove, E. F. (1925) *Ibid*, **10**, 445.
Cooke, R. A., Barnard, J. H., Hebald, S., Stull, A. (1935) *J. exp. Med.* **62**, 733.
Foran, F. L., Lichtenstein, M. R. (1931) *J. Allergy*, **2**, 444.
Frank, D. E., Gelfand, H. H. (1943) *Ibid*, **14**, 273.
Gay, L. N., Chant, E. H. (1927) *Bull. Johns Hopk. Hosp.* **40**, 270.
Harley, D. (1937) *J. Path. Bact.* **44**, 589.
Loveless, M. H. (1940a) *J. Immunol.* **38**, 25.
— (1940b) *Sth. med. J., Alabama*, **33**, 869.
— (1943) *J. Immunol.* **47**, 165.
Maunsell, K. (1944) *Brit. med. J.* ii, 236.
Scully, M. A., Rackemann, F. M. (1941) *J. Allergy*, **12**, 549.
Sherman, W. B., Stull, A., Cooke, R. A. (1940) *Ibid*, **11**, 225.
Stull, A., Sherman, W. B. (1939) *Ibid*, **10**, 130.

GREY HAIR IN ILL-NOURISHED CHILDREN

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GREYING of the hair in ill-nourished children was recognised several years ago. It is not uncommon in infants weaned on cereal gruels; in this case there is some loss of hair, and the hairs grow wavy and grey and are finer than normal. But much loss of pigment in older children, however ill-nourished they may be, is very uncommon.

Recently I have seen several cases in Malaya in children aged 5–12 years. Two were of the Malay race, and the others were Tamils.

CASE 1.—A Tamil girl, aged 12 years, had been for some time in a refugee camp. When first seen her hair, which had been cut short, was almost white (fig. 1). Her eyelashes were a light rusty grey; her eyebrows also had lost pigment; and the fine hairs of the body were very light.

She had many other signs of malnutrition: phrynoderma typically distributed over the greater part of her body, but not on her face, neck, hands, and feet; thickening and pigmentation of the bulba conjunctivæ of the outer and inner quadrants of the eyes; patches of erosion on the tongue; great enlargement of the liver; and emaciation. The spleen was enlarged, reaching to four finger-breadths below the costal margin; this was due to malaria. The bulba conjunctivæ probably became pigmented during years of chronically poor diet, and it was later, when the malnutrition became more severe, that the hair lost its pigment.

On a good diet, including eggs, milk, and fruit, improvement soon started, and three weeks later the pigmentation was returning to the proximal part of the hairs, and the tips of the eyelashes were a light rusty grey, the rest being black. This girl had a very dark skin, and there was no indication of loss of dermal pigment.

CASE 2.—Another girl in the camp, aged 10 years, was a less striking example, though the light appearance of the hair was sufficiently notable to render her conspicuous among other children of the same race.

CASE 3.—A boy, aged about 7 years, recovering from malnutrition, had the tips of his hairs and eyelashes of a light rusty colour, in contrast to the rest of the length of the hairs, which was black. The only other sign of malnutrition in this boy was that all his deciduous teeth were decayed, the upper incisors being reduced to blackened stumps.

CASE 4.—A girl, aged about 8 years, was an example of an earlier stage. The proximal part of each hair was white, grading in degree of pigmentation into the black distal part (fig. 2). The eyelashes showed a similar condition. This girl was emaciated, and her skin was dry and rough, with a well-marked mosaic pattern over the shins.

Many other cases have been seen, though the loss of pigment has been less than in the cases mentioned above. Usually only part of the hair is rusty, depending on whether the malnutrition is of the present or was of the past. In none of these children could any change in the texture of the hair be found; it was not finer or wavier than normal, as is the case in some ill-nourished infants. It may be that there are two types of greying of the hair due to malnutrition.

The hair of all the races of the tropics is black or nearly black; hence the diagnosis presents no difficulty, especially as the loss of pigment is seldom distributed evenly throughout the length of the hairs. It may be difficult or impossible to diagnose the condition in persons whose hair is naturally fair.

Greying of the hair has been produced in feeding experiments with animals. Pantothenic-acid deficiency in black rats is followed by loss of pigment in the fur. Necropsies on these rats reveal necrosis of the suprarenal glands, and the greying appears to be due to a loss of activities between one or more hormones and this vitamin. Some degree of greying of the fur of animals can be produced by other deficiencies than that of pantothenic acid from the diet; a deficiency of copper is an example.

Most of these children had been living largely on manioc root, and the vitamin deficiencies were multiple.

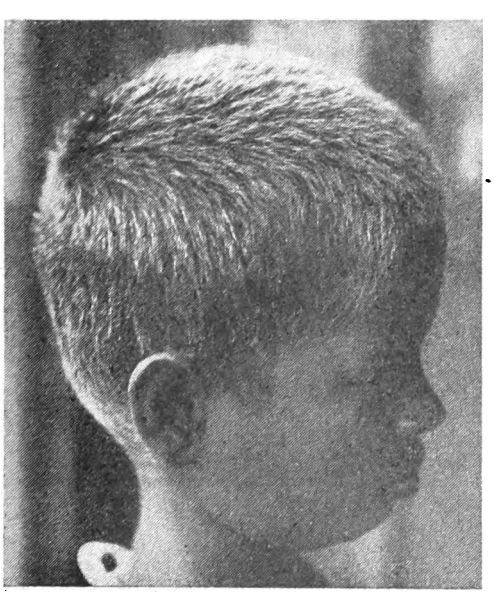

Fig. 1—Grey hair due to prolonged malnutrition (case 1).

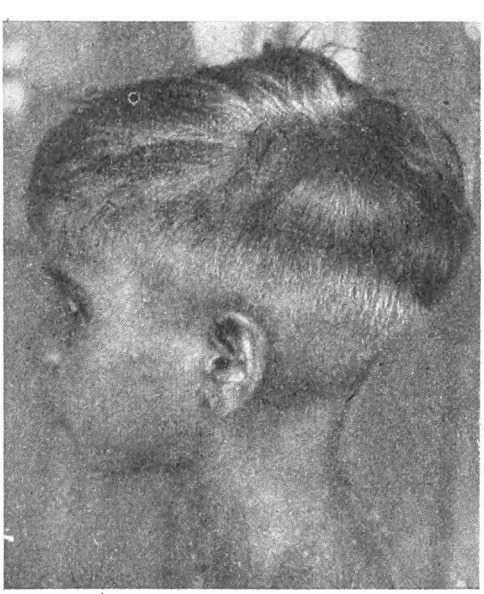

Fig. 2—Greying of hairs starting in an early stage of malnutrition. Where the hair has been cut short at the sides and back of the head, the proximal part of the hairs is white (case 4).

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Reviews of Books

Treatment of Peptic Ulcer

GEORGE J. HEUER, M.D., professor of surgery, Cornell University, and surgeon, New York Hospital; with the assistance of CRANSTON HOLMAN, M.D., and WILLIAM A. COOPER, M.D., assistant professors in clinical surgery in the university. London: J. B. Lippincott. Pp. 120. 18*s*.

IN no field of medical practice is it more difficult to judge the efficacy of alternative forms of treatment than in peptic ulcer. The various geographical, social, and personal aspects of this disease are complex enough to daunt most statisticians, but Dr. Heuer, by a careful study of peptic-ulcer cases admitted to the wards of New York Hospital between 1932 and 1942, has made one more attempt to draw conclusions from a statistical analysis of 1139 cases. He shows the work of a modern hospital in a direct pleasant style, in spite of the burden of figures, and offers an unbiased criticism of his results and those of his staff.

Though this is essentially a follow-up record, the period is often much too short, generally only 2–5 years; but no doubt we shall hear more of these cases during the next decade. At present it is doubtful whether a statistician would accept some of the conclusions that are drawn. Perhaps it is a pity that Dr. Heuer has restricted himself so rigidly to his figures, for it is refreshing to discern between the lines his own personal views—for instance on the value of gastro-enterostomy. The value of statistical analysis of a disease in which the human element plays so large a part is necessarily limited; but, as he insists, the figures are a necessary basis on which to form an opinion.

What People Are

A Study of Normal Young Men. CLARK W. HEATH in collaboration with L. BROUHA, L. W. GREGORY, C. C. SELTZER, F. L. WELLS, and W. L. WOODS. Cambridge, Massachusetts: Harvard University Press. Pp. 135. $2.

THERE is, unfortunately, no adequate long-term inquiry on record in which competent investigators have determined, by a sufficient variety of methods and with as little prejudice as possible, their physiological and psychological findings in a group of healthy young people for comparison with the subjects' subsequent history: hence the need for a study of the kind here reported. The first task of the Grant Study investigators was to decide what they understood by "normal": as they point out, it has often been conceived as meaning "free from abnormality." They were too well aware of the disproportionate amount of attention given to the abnormal to be content with so negative an idea of normality for their study, which was designed to throw light on the nature of the people who are successfully doing the world's work. For the investigators a "normal" individual is a balanced person whose combination of traits allows him to function effectively; therefore in the first instance they decided to take carefully selected Harvard students as their normal subjects. The approach was clinical, from the standpoint of medicine, physiology, psychiatry, psychology, anthropometry, and sociology. In the description of personality (which was entrusted to psychiatrists) categories and technical terms borrowed from psychopathology were strictly eschewed in favour of plain English: the investigators held that psychiatric illness represents disruption and disorder of function, not mere exaggeration of personality traits; consequently its language could not serve their purpose. Their abstention works to the advantage of the reader, who is relieved of any suspicion that the observations have passed through a distorting medium of interpretation before being presented to him.

The findings given in the book are preliminary but valuable, and in several respects in conflict with accepted beliefs. They cover personality traits; socio-economic data; athletic and other achievements; many physiological measurements taken before, during, and after work; diet; medical history; and performance in psychological tests. Because of its intention and method, this early report has something to teach, as well as to promise, those who wish to know about normal people.

A Short Practice of Surgery

(7th ed.) HAMILTON BAILEY, F.R.C.S.; R. J. MCNEILL LOVE, F.R.C.S., surgeons to the Royal Northern Hospital, London. London: H. K. Lewis. Pp. 1097. 40*s*.

THE 7th edition of this book will retain its place as the most popular manual of surgery for students in this country. It contains an additional 141 illustrations, bringing the total up to 1063, and it is slightly longer than the 6th edition. The illustrations are superb, clear, always apposite, and often in colour. A glossary of anatomical terms has been added which translates the picturesque old names into Birmingham terminology. The historical footnotes are good. A small book which covers so wide a field must necessarily be dogmatic but the views expressed are up to date. Small criticisms are that fig. 817, a coloured scheme of the pathology of the breast, is too compressed to be useful, and that tannic acid is advocated as the treatment of choice for burns.

New Inventions

ZYGOMATIC TRACTION FOR FRACTURE OF CERVICAL SPINE

SKULL callipers are now widely used for the application of traction in cases of fracture and fracture-dislocation

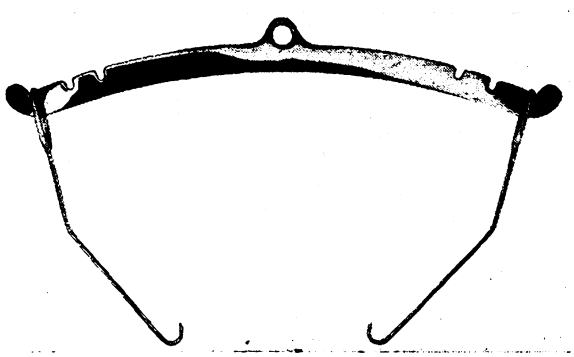

Fig. 1

of the cervical spine, but in some circumstances zygomatic traction is a useful alternative. This form of traction is, however, difficult to employ without suitable apparatus, and I have therefore had made for me by Messrs. Down Bros. a pair of hooks and a crossbar (fig. 1) which make its application a very simple matter.

The hooks can be slipped beneath the zygomatic arches (fig. 2) in a few seconds, and they are therefore particularly useful when the presence of a paraplegia makes it desirable to disturb the patient as little as possible. The slight degree of extension of the cervical spine produced by the direction of the pull sometimes helps to effect complete reduction, and I have found that heavy traction can be employed without causing the patient any undue discomfort. The hooks can, of course, be used in the first place as a temporary or first-aid measure and may, if thought desirable, be replaced later by skull callipers.

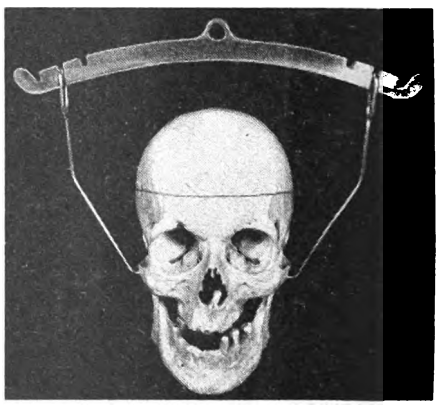

Fig. 2

J. S. BATCHELOR, F.R.C.S.

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THE LANCET

LONDON: SATURDAY, AUGUST 10, 1946

Physiology of Convalescence

WE still know remarkably little about the physiological and biochemical changes which take place during convalescence after trauma, though some of them seem disproportionately great. These changes have been studied intensively here and in the U.S.A. in the last few years, and at the Royal College of Surgeons on July 9 Prof. JOHN BEATTIE described some observations made on patients undergoing routine operations, after accidents, or with healing wounds, in an attempt to throw more light on the fundamental processes involved.

In a group of children between 9 and 12 years old, observed in hospital for a week before and 4 weeks after tonsillectomy, the weight fell steadily in the first 10 postoperative days and did not return to normal for a month, and the fall was appreciably greater than could be accounted for by reduction in food intake. Of the possible reasons for this very constant finding some may be dismissed at the onset. It is true that normal adults lose weight merely through being confined to bed—a sort of disuse atrophy—but this does not apply to children to any great extent. Nor do the effects of anæsthesia seem to be significant. It is the action of the surgical trauma on the body's protein metabolism that is the cause; the nitrogen balance shows a deficit, due to an increased loss in the urine which corresponds closely to what would be expected if the weight-loss was entirely a loss of protein. Similar findings were obtained in a group of young soldiers submitted to appendicectomy. Whether the trauma is an accident or an operation there is a nitrogen-loss which reaches its maximum around the middle of the second week after the incident. These observations agree with those of CUTHBERTSON and colleagues[1] in experimental fractures.

It is reasonable to ask if this increased breakdown of protein is due to a need for extra energy during the recovery period. But the administration of enough added sugar to supply the energy which the lost protein would provide made no difference to the negative nitrogen balance; even when ten times this quantity was given, so that glycosuria followed, there was no significant falling off in the outpouring of nitrogen in the urine. Another possibility is that the protein is broken down to yield an agent needed for healing. A pointer in this direction is that as the nitrogen output rises, in the early days, so the urinary content of adrenal cortical hormone reaches relatively enormous levels; and the provision of methyl groups, from certain protein breakdown products, is a necessary part of its synthesis. It is possible that a particular amino-acid with a labile and readily available methyl group, such as methionine, is required to build up the level of cortical hormone. Methionine constitutes only some 3% of the body proteins, so if this amino-acid is needed for synthesis some 97% of the body proteins would have to be metabolised away in the process. The adrenal cortical hormone in the urine would, however, account for only half the lost protein, so there must be some other cause or causes.

Though we do not know why the protein-loss occurs, or why it continues for so long, BEATTIE has confirmed the observations of CROFT and PETERS[2] that it can be affected by dietetic means. During the first fortnight after trauma an increase in first-class protein intake up to 150 g. a day has no effect on the loss in the urine; but this amount of added protein does accelerate the return to a positive nitrogen balance in the second and third fortnights. The practical lesson of this work is that, though in the first fortnight after an accident or operation the nitrogen-loss cannot be influenced except by forcing the protein intake to impossible heights, in the succeeding four weeks the recovery process can be assisted by a moderate increase in dietary protein. In experimental work on Service patients the duration of treatment, and the occupation of hospital beds, fell as the protein intake rose; and the shortening of convalescence is of particular value now when the greatest number of patients must be put on the road to recovery in the shortest time because of lack of bed space. The standard King Edward Hospital Fund diet contains not much more than 60 g. of first-class protein a day; and at this level large sterile granulating wounds may make no progress to epithelisation and healing. Biopsy of the wound edge then shows a complete absence of mitosis, and skin-grafting fails though the surgical technique is above reproach. When the daily protein intake is stepped up to 150 g. mitosis begins, grafting operations are successful, and the wounds heal rapidly. Fracture union is entirely comparable, for it is a form of repair by growth, with ossification occurring in a protein matrix, and this also is held up by an inadequate protein intake.

WHIPPLE has classed the body proteins into those which are labile and can leave the cell without harm, and those essential to cell life, deprivation of which leads to coma and death. Severe trauma may cause an almost complete exhaustion of the labile reserves without any overt alteration in plasma-protein levels. This is in contrast to the chronic protein deficiency in such conditions as œsophageal carcinoma, where the blood-level does eventually fall. It is in these conditions, where there is preoperative emaciation, that successful operation is often followed by fatal coma because the reserve of labile protein is already exhausted, so that to balance the nitrogen-loss produced by operative trauma the body draws on the essential tissue-protein, with irreversible consequences. American work has demonstrated the value of a high preoperative intake of protein or amino-acids in lowering mortality in these cases. The intravenous administration of amino-acids may be of great value in cases of excessive vomiting or œsophageal obstruction, when no other route is available, but in Professor BEATTIE's view it is sufficient, and perhaps better in most cases, to give them slowly by mouth or by stomach-tube. As he pointed out, it is a mistake to give too much of them—75 g. a day given in 5% solution is enough—and it is important to remember that this will all be burnt away and lost if enough sugar is not given at the same time. In most cases milk

1. Cuthbertson, D. P., McGirr, J. L., Robertson, J. S. M. *Quart. J. exp. Physiol.* 1939, 29, 13.

2. Croft, P. B., Peters, R. A. *Lancet*, 1945, i, 266.

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and milk products are just as valuable as the amino-acids themselves.

Professor BEATTIE's work emphasises once again the therapeutic importance of a hospital diet which is ample in all nutrients, but especially in protein, and is so chosen, prepared, and served that the convalescent patient will eat it with relish.

Sickle-cell Trait and Anæmia

HERRICK's discovery in 1910 [1] of sickle-cell anæmia in a coloured medical student at Chicago revealed, almost by chance, a hereditary blood disorder at the very periphery of its world distribution. It seems clear that the sickle-cell gene originated in Africa and was carried by slaves to North and South America, but there was little precise knowledge until HUCK [2] in 1923 showed that it behaves as a mendelian dominant. As long as the diagnosis rested on the presence of sickle cells in stained films, the condition was rarely identified; for although such cells are usually present in severely anæmic patients with the disease, they may be absent from the stained film or may be confused with poikilocytes. The wide prevalence in the African races and their descendants went unrecognised until it was discovered that cells appearing normal in the stained film might show sickling under the influence of anoxæmia or alterations of pH or temperature—the change being reversible. DIGGS [3] demonstrated that sickling results from the anoxæmia produced by sealing a drop of blood under a coverslip or by placing blood mixed with 10% formalin in saline under oil. The time taken for this change to appear can be reduced by constricting the finger with a tourniquet for five minutes before the blood is withdrawn. The anoxæmic blood must be left for twenty-four hours at 37° C before sickling can be excluded; the phenomenon appears more slowly at a lower temperature, and BEET [4] has shown that sickling is not always apparent at room temperature in Northern Rhodesia at the end of twenty-four hours. Severely anæmic blood always sickles far more readily than blood which is not anæmic.

The sickle-cell gene manifests itself in two ways. Most of those whose cells sickle only when the blood is anoxæmic have no symptoms, and have a normal red-cell count, with no sickle cells in the stained film. These are examples of the "sickle-cell trait," and it is not yet clear whether a person with the trait will always remain symptom-free. It has been estimated that the trait is present in 7·3% of American negroes [5]; but the highest figure comes from the true Negroes of West Africa, among whom sickling was found in 15·5%.[6] Less commonly, the condition takes the form of a hæmolytic anæmia, and the proportion of affected persons that develop anæmia has been variously put at from 1 in 40 to 1 in 7, which means that between 22,000 and 130,000 negroes in the United States become anæmic from this cause. The fact that many patients with the anæmia do not survive to adult life may explain why this dominant mendelian gene has not become almost universal in Africa and among the American negroes. Like Cooley's anæmia (a familial disorder of the eastern Mediterranean peoples and their descendants) and acholuric jaundice (a disease largely of the Caucasoid races), sickle-cell anæmia is generally found in the children of certain families, other members of which show only the trait. The normal or increased resistance of sickle cells to hypotonic saline, and the absence of spherocytes, distinguish it clearly from acholuric jaundice, but clinically the two diseases have much in common. Fluctuating anæmia is punctuated by hæmolytic crises, with fever, splenomegaly, hepatomegaly, jaundice, and reticulocytosis; and normoblasts are found in the peripheral blood. Even leucocytosis may occur; so the disease may simulate the von Jaksch syndrome or leuco-erythroblastic anæmia. The patient may complain of severe rheumatic pains, and cardiac murmurs and congestive failure may cause confusion with rheumatic carditis. Cholelithiasis may also develop. Chronic leg ulcers are common, and in Africa this anæmia may sometimes be a factor in tropical ulcer. There is often a hæmorrhagic tendency, especially to epistaxis, and thrombosis may produce symptoms in any part of the body. Abnormalities of somatic and endocrine development have been described. In Africa the condition is commonly confused with malaria, and differentiation may be impossible clinically.

Confusion of sickle cells with the demilune remains of red cells and with elliptical red cells has led to erroneous reports of sickle-cell anæmia in whites. Though the genuine condition has been reported in white Americans, it is very rare, and OGDEN [7] is convinced that all such cases have arisen from miscegenation with African stock. It has also been recorded in Canada, Mexico, South America, and other countries where African negroes have settled, but so far no case has been reported in Britain or any other part of Europe, except Portugal. The possibility of the gene accounting for obscure hæmolytic anæmias might perhaps be borne in mind; and if the test for sickling were adopted as a routine procedure whenever a coloured person had a blood-count, it is probable that the condition would be detected in many countries which have not yet reported the anæmia or the trait.

Breeding Out Intelligence

IN this year's Galton lecture to the Eugenics Society [8] Prof. GODFREY THOMSON made a disquieting statement on the trend of national intelligence. Having been particularly interested in the selection of children for prolonged school and university courses, he is fearful of the end-result of this lengthy training and the delay or failure in marriage or procreation that it entails. "The educational system of the country," he said, "acts as a sieve to sift out the more intelligent and destroy their posterity. It is a selection which ensures that their like shall not endure." Intellectuals tend to marry late, if at all, and to have small families. The general consensus of psychological opinion suggests that 50–80% of one's intellectual capacity is inherited: much less than half the differences between intelligence-test results in different individuals can be explained on

1. Herrick, J. B. *Arch. intern. Med.* 1910, **6**, 517.
2. Huck, J. B. *Bull. Johns Hopk. Hosp.* 1923, **34**, 335.
3. Diggs, L. W., Pettit, V. D. *J. Lab. clin. Med.* 1940, **25**, 1106.
4. Beet, E. A. *E. Afr. med. J.* 1946, **23**, 75.
5. Diggs, L. W., Ahmann, C. F., Bibb, J. *Ann. intern. Med.* 1933, **7**, 769.
6. Evans, R. W. *Trans. R. Soc. trop. Med. Hyg.* 1944, **37**, 281; *Ibid*, 1945, **39**, 207.
7. Ogden, M. A. *Arch. intern. Med.* 1943, **71**, 164.
8. *Eugen. Rev.* 1946, **38**, 9.

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environmental or educational grounds. The diminished fertility which accompanies late marriage combines with the pressure of economic circumstance to limit the families of the university-trained section of the nation, who mostly think they should have only as many children as they can afford to educate to their own standard. Hence the average level of intelligence is lower in each succeeding generation because the more intelligent have failed to contribute their proper quota to it.

The significance of such a statement needs no emphasis, and its basis deserves close examination. In a survey of the results of intelligence tests in a group of nearly 3000 school-children, THOMPSON and SUTHERLAND found that there was a negative correlation ($r=-0{\cdot}25$) between intelligence quotient and size of family. This means that, in 60% of the families studied, smallness of family was associated with mental ability above the average. There is a consistent trend from the 66% above-average intellects in only children to the 39% above-average intelligence-test results in families of over seven. That this was not wholly due to differences in home environment was shown by subsequent demonstration of a similar association in the children of miners on the same social level. Further, a similar survey of intelligence among children whose parents were moving from slum to new housing areas, and for whom all the relevant social and environmental data were available, showed precisely the same association, even when these social factors had been taken into account in the statistical analysis. This earlier work was strikingly confirmed by a very comprehensive study, by FRASER ROBERTS and his associates, of intelligence among an entire age-group of the children of Bath. They too showed this definite negative association between the children's intelligence quotient and the size of the family to which they belonged.

Attempts have been made by LENTZ and R. B. CATTELL to estimate the decline in the average intelligence level, from one generation to the next, which may be expected from the difference in reproduction-rate between the more and the less intelligent families. These attempts were open to serious statistical criticism, but recently R. A. FISHER has evolved a particularly neat method of estimating, from the results of intelligence tests on children of the present generation, the average level of intelligence in the previous one. When this technique was applied to THOMSON'S data it became clear that there was a decline of 2 points in the Binet intelligence scale between one generation and the next. At least some of this deterioration is due to what is in effect a partial sterilisation of the more intelligent section of the nation. Before positive measures are taken to diminish this adverse trend, however, the practical men of affairs responsible for these measures will need even more striking proof of the menace to the national future which these results imply. Professor THOMSON himself thinks that a more direct experiment involving 50,000 children over a period of five years might be enough to show the downward trend. He has no faith himself that there has been any change in the essential nature of intelligence, from ability to appreciate abstract conceptual relationships to a more practical sort of ability stimulated by the increasing mechanisation of life. As he points out, it is on men possessing the former type of intelligence —the designers and inventors—rather than on the technicians that we depend for progress in the modern world. In framing measures of social and economic policy such as family allowances, this country cannot afford to consider merely the quantity of the succeeding generation. We are faced with the question how its intellectual quality can be improved by encouraging —by economic means or otherwise—an increased birth-rate among the more intelligent.

Annotations

UNIVERSITY EXPANSION

IN the past two years the Exchequer grant to the universities has been raised from £2 million to £9 million. Now by extending their terms of reference (see p. 217) Mr. Dalton has given the University Grants Committee elbow room to make the most of the opportunity he is offering them. To the committee's present duties of inquiring into the needs of the universities and advising the Government on the application of grants has been added the further charge of helping in the preparation and execution of plans to develop the universities so that they are fully adequate to national needs. The Barlow [1] and Clapham [2] reports have already shown that the need is real, and in the *Times* of Aug. 1 Sir Ernest Simon, chairman of the council of the University of Manchester, suggests that in the next ten years the universities will probably be asked to double their output of students, and at the same time greatly expand the amount of research they undertake. Medicine has always claimed from the universities a large proportion of each year's graduates. In the future it is likely to become still more exigent, and the profession will welcome these parliamentary preliminaries to academic expansion.

LABORATORY DIAGNOSIS OF SMALLPOX

WHILE the clinical diagnosis of typical smallpox is not difficult, the return of infected soldiers from endemic areas has emphasised again that atypical cases may tax the skill of the most experienced observer. In partially immune subjects smallpox, like other diseases, is often mild, but the virus may still be highly virulent and produce severe lesions in susceptible people. Downie,[3] in a timely review of the laboratory methods now available for identifying smallpox, points out that diagnosis may be made either by detecting the variola virus or by serological tests. Of the older methods Paul's test is no longer thought reliable, and with other animal tests the result may take three or four days. Inoculation of the chorio-allantoic membrane of the developing hen's egg has the same disadvantage, though this technique may be useful in distinguishing smallpox from generalised vaccinia. A more valuable approach is the direct microscopical examination of early lesions as employed by van Rooyen and Illingworth.[4] Preparations are made by scraping the base of papules and vesicles, and, after transferring to a clean glass slide, staining by Paschen's method. Rapid results are obtained but it requires skill to identify the elementary bodies, and the test loses reliability as the disease progresses. Most of the serological methods now in use depend on a reaction between antigenic material collected from the patient and a potent antivaccinial serum prepared in rabbits. The ordinary serological method of detecting antibody in the patient's serum is not so satisfactory, because it cannot be demonstrated in the first week of the disease and because recently vaccinated people may give a

1. See *Lancet*, June 8, p. 859.
2. *Ibid*, July 27, p. 141.
3. Downie, A. W. *Month. Bull. Min. Hlth & E.P.H.L.S.* 1946, 5, 114.
4. van Rooyen, C. E., Illingworth, R. S. *Brit. med. J.* 1944, ii, 526.

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positive test. Undoubtedly the best available method is the complement-fixation test in which the antigen is obtained from the contents of six vesicles or a similar number of crusts from a suspected patient. With this test Downie got positive results in all of 22 confirmed cases of smallpox in 12 different outbreaks in this country, and he has yet to get a false positive from cases of chickenpox, zoster, or other skin conditions clinically suspect. According to W. J. Tulloch, who has had considerable experience of the test in Scotland, the complement-fixation test in smallpox is more satisfactory than the examination of throat swabs in the diagnosis of diphtheria. The value of the test lies not only in its reliability from the early vesicular stage to the later crusting stage of the disease but in the fact that a definite report can usually be given within 24 hours. With vaccination against smallpox no longer a national custom, accurate and rapid diagnosis has become more important than ever.

DIPHTHERIA IN SCANDINAVIA

QUITE a crop of articles on various aspects of diphtheria has appeared in the Scandinavian medical press during the past year, and several of them mark an advance in knowledge. Vogelsang and Kryvi [1] give an account of Schick's reaction carried out on adults during an epidemic of diphtheria in Bergen, and Hognestad [2] reports on diphtheria vaccination in Bergen between 1940 and 1944. Böe [3] discusses diphtheria in the first year of life, and Kahrs [4] retails his experiences of laryngeal diphtheria in a hospital in Stavanger.

More recently Ipsen,[5] of Copenhagen, has made a detailed statistical analysis concerning diphtheria immunity of adults in that city. He points out that diphtheria immunisation, which in 1944 was extended to more than 90% of the children in Copenhagen between the ages of 4 and 15, had greatly reduced the diphtheria morbidity among children. But to judge by the great diphtheria morbidity among adults, "the bacillus of diphtheria is more prevalent in 1944–45 in the population of Copenhagen than it has ever been in the last 25 years." A report by Lassen [6] (in charge of the Blegdams Fever Hospital in Denmark) and his associates shows that in the autumn of 1941 the health authorities in Copenhagen set an intensive campaign on foot in favour of immunisation, and this measure was held responsible for a remarkable decline in diphtheria admissions in 1942 to this hospital, the number (50) being the lowest since it was opened in 1879. However, next year, 1943, brought an ominous change in the virulence of diphtheria bacilli; the gravis type, hitherto quite rare, was introduced by the invading Germans. During the winter of 1943–44 a total of 403 cases were treated at the Blegdams Hospital. But as over 90% of Copenhagen's school-children had been vaccinated against diphtheria since 1941, no less than 70% of the patients were adults. Not one of the 36 who died had been immunised, but among the unprotected the death-rate was high and in them the course of the illness seemed to be the same whether they had had a previous attack or not. As 73% of the patients had never been immunised there is evidently still much room for improvement in this direction.

Mortensen,[7] of Denmark, also makes a powerful plea for immunisation. His study deals with 573 cases of diphtheria covering a six-year period, 1939–45. While the fatality-rate was 9·3% for the unprotected, it was 1·1% for the protected, among whom complications were comparatively rare and the illness comparatively mild. In the first part of his period the intermedius type predominated, whereas in the latter part mitis and gravis were most prominent. The last-named was out and away the most common find in "carriers." A big-gish rise in the diphtheria morbidity in 1944–45 could be traced to several different factors, one of which was that among the immunised there were a considerable number of carriers, and slight cases of diphtheria were often overlooked. This shows the desirability of extending protection to every member of the community; witness also the fact that in this study there were nine patients over the age of 60, all of whom had not been vaccinated, and three of whom died.

1. Vogelsang, T. M., Kryvi, B. O. *Nord. Med.* Oct. 5, 1945, p. 2021.
2. Hognestad, H. *Ibid*, p. 2026.
3. Böe, J. *Ibid*, p. 2030.
4. Kahrs, T. *Ibid*, p. 2034.
5. Ipsen, J. *Ibid*, March 22, 1946, p. 630.
6. Lassen, H. C. A. *Ugeskr. Laeg.* May 23, 1946, p. 499.
7. Mortensen, V. *Ibid*, June 27, 1946, p. 629.

TOMORROW'S BREAD

BY a series of improvisations the worst ills of famine that threatened to beset two continents have so far been averted. The question in Central Europe has been, can rations be maintained, until the harvest is gathered, at the new low levels adopted in the spring? If they are maintained, then widespread famine and unrest can probably be avoided; if, on the other hand, they fall appreciably the consequences will rapidly be disastrous. It is now believed that the position can in fact be held until the harvest now being gathered brings relief. But it will take some time for the year's wheat to be transported and distributed, and even then not all the peoples of Europe are likely to be sure of the daily 2000 calories which is the minimum aim of the Food and Agriculture Organisation (F.A.O.).

In the *Second Review of the World Food Shortage*,[1] the present situation and the outlook for 1946–47 are considered. In the United Kingdom existing scales will, it seems, be at least maintained. The only doubt of our ability to continue the meat-ration of recent months is raised by the increasing prices charged by some exporting countries. Milk-production, now at about pre-war level, may fall slightly through decrease in feeding-stuffs; consumption of milk is a third greater than before the war, but it may be possible to equalise the balance by importing milk preparations. There is little hope of improved distribution of oils and fats, since the world shortage will probably remain acute for at least a year, and then improve only slowly. World supplies of sugar will, it is thought, rise in the coming twelve months; but the need to re-establish stocks may delay increased consumption. The general outlook is still sombre, but here and there the clouds are broken.

The introduction of bread-rationing is discussed at some length. Since the beginning of the year various measures have been taken to reduce the requiremen s of flour. The extraction-rate has been increased progressively from 80% to 82½%, 85%, and, on May 12, to 90%. In April the weight of the 2 lb. loaf was diminished to 1¾ lb., and biscuit production was reduced by 25%. An economy campaign was launched, and the use of bread in restaurants was restricted. It was calculated, nevertheless, that by the end of August the stock of wheat and flour would fall to 800,000 tons. This is eight weeks' supply, which might appear, with the promise of the harvest, to be enough to tide the country over. But this was working stock, with no allowance for the reserve essential if local shortages and breakdowns are to be avoided. Local shortages, it was argued, would have soon become generally known, and this would have led to the purchase by consumers of more flour than was needed, and thus to the widening of the area of shortage, and finally to a complete breakdown in distribution. Some critics have pointed to the larger bread-rations, and to the better food in general, that can be procured on the Continent, as arguments against this further restriction;

1. Cmd. 6879. H.M. Stationery Office. Pp. 35. 6d.

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but where the visitors' food is best, there the black market is most flourishing, and there also the poorer people are closest to starvation. The ration of bread is not, in itself, a guide to a country's nourishment, for some of the countries that have the highest ration of bread are faring worst in total calories. Because of more-or-less even distribution, supplies of food in Britain may seem austere; but in fact they approximate more closely to those in the food-exporting countries than to those in Europe.

The report records a progressive fall in stocks of food and feeding-stuffs in this country from 5·4 million tons at the end of June, 1945, to 3·7 million tons at the end of June, 1946; and they are expected to fall to about 3·4 million tons by the end of this month. The United Kingdom, it is concluded, can make no further sacrifices to bridge the gap between world import requirements and exportable supplies.

THIOURACIL

THREE years have passed since Astwood's paper [1] brought hope that thyrotoxicosis might be controlled by swallowing tablets. Clearly thiouracil is no more the final answer than is thyroidectomy; but though the real cause of the trouble—the *causa causans*—still remains a mystery, most reports on its clinical use have been favourable, and the alarming accounts of agranulocytosis which tempered early enthusiasm have been followed by mass statistics and individual papers showing that the risk is slight, though sufficient perhaps to discourage the general use of thiouracil outside hospitals where patients can be properly supervised.

Since our last review of the position in this country and the United States [2] Professor Meulengracht and his colleagues have described their experience in Denmark.[3] Opportunity was enhanced for them by an "epidemic" of thyrotoxicosis which began in 1941, reached its peak in 1944, and now seems to be subsiding.[4] Altogether, 144 patients have been treated over a period of three years, including 100 primary goitres, 23 secondary goitres, and 10 postoperative relapses. Thyroidectomy was carried out in 10 cases for various reasons, sometimes in order to study the effect of thiouracil as a preoperative measure. The aim of treatment was permanent cure and not merely control of the disorder until a natural remission set in or the patient was fit for operation. Dosage was essentially the same as that in general use, and was varied according to individual needs. Methyl thiouracil, the form adopted by Meulengracht, is easier to produce, and therefore less expensive, than thiouracil; it is at least equally effective, and toxic reactions are probably less common. The patients, who were not strictly confined to bed, were given phenobarbitone as a general sedative. The average stay in hospital was one month, and thereafter treatment was continued at home. The usual follow-up clinics were held and the patients were told that should fever, sore throat, or a rash develop they must stop taking the tablets and report at once. Meulengracht prefers this to repeated blood-counts. Some physicians in this country have reached the same conclusion, since the blood may be normal one day and severely leucopenic the next; and in any case leucopenia may cease spontaneously even though the drug is continued.

Immediate results were uniformly good, no case failing to respond. The average duration of treatment was 8–9 months and of follow-up 9–10 months. Early relapses sometimes followed premature discontinuance of the drug, but in 60 cases where treatment was stopped altogether there were only 5 relapses, all mild. Exophthalmos, in time, almost always disappeared, or nearly so. The goitre was usually unaffected, but in 15 cases it diminished or disappeared. Occasionally the swelling increased, especially when the basal metabolic rate had fallen to about normal.

Complications were few: 3 patients who developed drug fever were referred for operation; occasional rashes and mild conjunctivitis did not interfere with treatment; and agranulocytosis was not seen at all. Meulengracht points out that an operative mortality of 2% must be considered minimal, whereas deaths from agranulocytosis after treatment with methyl thiouracil were under 0·5% in an American series of 5745 cases,[5] and this is probably a maximal figure since it covers early days when experience was being gained. Moreover, major complications such as thyrotoxic crises, tetany, and injury to the recurrent laryngeal nerve may follow operation, and relapses are quite common. There is no doubt that the results achieved by surgery are impressive; but most patients prefer medical treatment. They can return to work once control has been achieved, and in some clinics mild cases are treated as outpatients from the beginning. It is true that supervision is more difficult and takes longer; but patients rarely object to this, and those in a hurry can still take the short-cut offered by surgery.

Meulengracht's results are in keeping with those obtained in this country, though some physicians and surgeons still remain sceptical of thiouracil's value. The all-important requirement for safety is coöperation between patient and doctor; the natural history and variable course of thyrotoxicosis must be remembered, and an effort must be made to understand the whole patient and her environment, as well as those personal problems which so often seem to act as precipitating factors in predisposed individuals. It is useless to deal with the thyroid and ignore the chronic vague ill health of which the thyroid disorder may be but a part. As a preoperative remedy there is little doubt that thiouracil is valuable, especially if iodine is given during the last 2–3 weeks to diminish the gland's vascularity. Ten years ago Sir Thomas Dunhill [6] emphasised that some patients cannot be made safe for operation, even with the help of iodine; but this group may now be reduced or even eliminated, especially as patients are nowadays rarely left untreated until they are seriously ill.

It is still far too soon to dogmatise or to speak of permanent cure with thiouracil. It seems, however, that the ideal case for the drug is probably the patient with early primary thyrotoxicosis. Nodular goitres take longer to respond, and there is some evidence that they are more likely to relapse [7]; so, even apart from cosmetic considerations or pressure symptoms, it may be better for the patient to undergo thyroidectomy; and Beierwaters and Sturgis [8] recommend the operation in any case because of the risk of malignant change, though this view is debatable. Relapses following discontinuance of the drug are most likely to occur within two months if the drug has been given for less than about six months. Remissions after lengthier treatment are much more likely to be permanent, according to follow-up reports so far published.[8 9]

DENTAL RESEARCH UNIT FOR LONDON

THE Medical Research Council have arranged with the medical school of King's College Hospital for the establishment of a dental research unit there, under the direction of Mr. J. D. King, PH.D., L.D.S., of their scientific staff.

1. Astwood, E. B. *J. Amer. med. Ass.* 1943, **122**, 78.
2. *Lancet*, 1946, **1**, 508.
3. Meulengracht, E., Kjerulf-Jensen, Kai Schmith. Paper read at 20th Scandinavian Congress for Internal Medicine, Gotenburg, Sweden, June 27–29, 1946.
4. Meulengracht, E. *Acta med. scand.* 1945, **121**, 446.
5. Van Winkle, W., et al. *J. Amer. med. Ass.* 1946, **130**, 343.
6. Dunhill, T. *Brit. med. J.* 1935, **ii**, 1034.
7. Palmer, M. V. *Ann. intern. Med.* 1945, **22**, 335.
8. Beierwaters, W. H., Sturgis, C. C. *J. Amer. med. Ass.* 1946, **131**, 735.
9. Barr, D. P., Schorr, E. *Ann. intern. Med.* 1945, **23**, 751.

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Special Articles

SHORT-CUT METHOD IN APPLYING NUTRITIONAL PRINCIPLES

THE Preparatory Nutrition Committee of the Food and Agriculture Organisation of the United Nations has adopted (in a report dated May 20, 1946) proposals made by two of their members for a short-cut method of applying nutritional principles to the international distribution of foodstuffs. These principles are applicable to the long-term policy of the F.A.O. as well as to short-term practice during the world food emergency, but they should be of special value in this emergency as simplifying administration.

The need for applying nutritional principles was emphasised in a statement by the British Food Minister in September, 1945, and the authors quote it as expressing their views. The Minister said: "If there is to be any equity in the distribution of limited food-supplies between different countries, it is necessary that we should be able to assess for each country its essential human needs, and to know the extent to which these needs can be met from home production or from existing stocks. Only by having this information available are we able to assess fairly the claims of each country for a share in the world supplies or, in the case of the exporting countries, the shares which they may reasonably be expected to contribute to the common pool. . . . It is dangerous to consider meat or fats or grain in isolation. We must also consider the total supplies and dietary of each country. Advances in nutritional science have enabled us to estimate, in a way which was not possible before, the food requirements of a population."

The fact that there are, in practice, other considerations than nutritional needs which influence allocations of foods (for instance, transport) does not decrease the necessity for this nutritional background. To work out everything de novo and apply physiological principles of nutrition separately to each case under consideration is a lengthy business.

The short-cut method tackles the problems of applying nutritional criteria so as to meet "practical operators" half-way (or more than half-way) and find a means of bridging the gap between principles and practice. It must fulfil three indispensable requirements: (1) it must be in commodity terms rather than in terms of nutrient elements; (2) it must group commodities in the categories that are most significant from the nutritional point of view, but which are, at the same time, convenient for the allocating authorities; and (3) the amount of supporting data must be kept to a minimum.

The authors of the plan squarely face the difficulties, the first of which is that in some countries the necessary data about food conditions are not available. They concede this but say it is also true that "there are many countries for which reasonably good food-supply estimates do exist, and in all cases better information could be obtained if the requisite steps were taken to secure it." There must be an improvement in fact-finding services and the development of closer working relations between research-workers and the officials responsible for policies and programmes. There are real difficulties; but, as the authors of the plan say, "War-time experience in dealing with food estimates, as with other problems, has shown that where there's a will there's a way."

TECHNIQUE

The technique of the short-cut method depends on the application of two simple sets of tables called "ready reference tables" and "ready reckoning tables."

These tables allow for the fact that neither "import requirements" nor "exportable surpluses" are fixed on absolute quantities. The more urgent the needs of the deficit countries, the greater should be efforts of supplying countries to expand their exports. Conversely, the larger the volume of imports that can be provided for deficit areas, the less urgent will become the needs which still remain unsatisfied. Many of the factors to be considered in the allocation of food-supplies are interdependent variables. A practical system for examining them in their relations to one another must therefore make use of sliding-scales rather than of rigid predetermined standards. For that reason the requirements analysis tables which are given show the relative levels of consumption that would result from imports and exports of varying volumes.

The short-cut method focuses attention on the balancing of needs and supplies for a twelve-month period. It is necessary to plan ahead for the whole of the time between one harvest and the next.

Analyses resulting from the use of these tables give appropriate weight to each of the two most important considerations in the appraisal of food requirements: (1) basic physiological needs; and (2) customary food habits as reflected in pre-war diets.

In the interests of simplicity, products are dealt with in four major commodity groups that are important in international shipments:

(1) Cereals.
(2) Fats and oils (visible).
(3) Protein-rich foods, comprising milk and milk products except butter (in terms of their content of solids, fat and non-fat), meat, poultry, fish, eggs, pulses, and nuts.
(4) Sugar.

Though cereals rank first in importance among the foods required for relief, it is analytically convenient to consider them last. A distribution of cereals can thus be made which takes into account the contribution that will be made to the diets of the different countries by non-cereal imports. Accordingly, needs in relation to supplies will first be considered for fats and oils, protein-rich foods, and sugar. Among the protein-rich foods, separate analyses should be made: for milk, because of its special combination of nutritive values; for other animal products, because of the preference consumers have for them; and for pulses and nuts, because they provide an economical means of meeting protein requirements.

When allocations of these non-cereal foods have been actually or tentatively established, the additional calories thus provided per head per day for consumers in deficit countries can be quickly calculated by using the coefficients in reference table IV. These would be added to the calories which, it is estimated, will be obtained from indigenous supplies (see reckoning table 4). Corresponding adjustments for supplying countries can be similarly made. When this has been done, the resulting calorie-consumption levels for the various countries can be used directly as a basis for the allocation of available cereal supplies. (See reference table V and reckoning table 5.)

This simple treatment of cereals, as a balancing factor in making up calorie deficits, does not indicate any disregard for their importance as sources of protein, iron, thiamine, and other nutrients. On the contrary, it is because of the general nutritional value of cereal foods, as well as because of the special importance of calories in low-level emergency diets, that this short-cut method of requirements analysis can be recommended for adoption.

PRINCIPLES ADOPTED IN DESIGNING THE TABLES

In these tables the minimal physiological requirements (related to the "temporary maintenance" level in the

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report of the Preparatory Nutrition Committee of F.A.O.) which have been taken to represent needs so urgent that they must be given a top-priority claim on supplies are as follows. They are calculated in terms of national per-caput average supplies at the retail stage.

Cereals.—No minimum is set in commodity terms. Quantities would depend on the calorie deficit.

Fats and Oils (Visible).—The amount allowed per head per year in terms of net fat-content is 10 kg., which would provide about 28 g. per head per day and supply approximately 10% of the calories in the "emergency subsistence diet." In cases where the average pre-war consumption was less than 10 kg. this is taken as the minimum. It would be met but not exceeded.

Protein-rich Foods.—The amount allowed is 30 kg. per head per year in commodity terms. This quantity of these foods, reasonably assorted, would provide about 15 g. of protein per head per day. Where pre-war consumption was less than 30 kg. this would be taken as the governing level. It would be met but not exceeded.

Sugar.—The amount allowed is 10 kg. per head per year, or the pre-war level if that was lower.

When once the minimal requirements, as suggested, have been met, the distribution of additional supplies should be determined on a basis that gives recognition to the importance of established food habits and customary patterns of consumption. The most practical means of doing this is to relate allocations to the pre-war consumption levels in the different countries concerned. A ready and flexible method for doing this is provided in the requirements analysis tables.

REFERENCE TABLE I—FATS AND OILS *

Country	Population (millions)	Pre-war consumption (kg./head/yr.)	Annual supplies (in 1000 metric tons) needed to provide a minimum (10 kg. per head per year or pre-war level if lower) or the indicated percentages of pre-war consumption if they are higher				
			60 %	70 %	80 %	90 %	100 %
Faminaria	40	14	400†	400†	448	504	560
Starvania	3	23	41	48	55	62	69
Hungerland	15	7	105‡	105‡	105‡	105‡	105‡
Surplustate	140	20	1680	1960	2240	2520	2800

* Fat-content basis. † Established by minimum of 10 kg.
‡ Established by pre-war level less than 10 kg.
A metric ton = 1000 kg. = 2204 lb. avoirdupois.

REFERENCE TABLE IV—CALORIE COEFFICIENTS * FOR NON-CEREAL GROUPS

Country	Cals./head/day from 1000 metric tons of supplies per year		
	Fats and oils	High-quality protein group	Sugar
Faminaria ..	0·61	0·2	0·28
Starvania ..	8·0	2·66	3·67
Hungerland ..	1·6	0·53	0·73
Surplustate ..	0·17	0·06	0·08

* Approximations only for protein group.

REFERENCE TABLE V—PRE-WAR CALORIES AND CEREAL COEFFICIENTS

Country	Pre-war calorie levels	Cereals per year providing 100 cals./head/day* (metric tons)
Faminaria ..	2850	493
Starvania ..	2700	37
Hungerland ..	2700	185
Surplustate ..	3080	1943

* Assuming 90 % extraction in Europe and 80 % in U.S.A.

RECKONING TABLE 1—FATS AND OILS *

Country	Estimated indigenous supplies for consumption, 1946–47	Deficits and excesses, for 12 months, at indicated levels (1000 metric tons)									
		60 %		70 %		80 %		90 %		100 %	
		Def.	Exc.	Def.	Exc.	Def.	Exc.	Def.	Exc.	Def.	Exc.
Faminaria	250	**150**	..	**150**	..	**198**	..	**254**	..	**310**	..
Starvania	20	**21**	..	**28**	..	**35**	..	**42**	0	**49**	..
Hungerland	105	0	0	0	0	0	0	0	0	0	0
Surplustate	2500	..	820	..	540	..	260	**20**	..	**300**	..
Total ..		**171**	820	**178**	540	**233**	260	**316**	0	**659**	0

* Fat-content basis.

RECKONING TABLE 4—CALORIE LEVELS WITHOUT CEREAL IMPORTS

Country	Estimates of cals./head/day obtained from indigenous supplies plus or minus non-cereal imports or exports				Total
	Indigenous supplies	Fats and oils imported*	High-quality protein foods imported†	Sugar imported‡	
Faminaria	1900	121	130	32	2183
Starvania	1000	280	230	261	1771
Hungerland	2000	0	131	4	2135
Surplustate	3300	(−40)	(−58)	(−15)	3187

* Assuming level of 80 % of pre-war
† Assuming level of 90 % of pre-war
‡ Assuming level of 70 % of pre-war
} indigenous supplies for receiving countries.

The following data are necessary for the preparation of the tables:

(1) current population estimates;
(2) pre-war per-caput consumption estimates for the three major commodity groups (fats and oils, protein-rich foods, and sugar) and for total calories;
(3) calorie coefficients for these three groups; and
(4) current estimates of consumption from indigenous supplies in terms of the same three commodity groups and in terms of calories.

RECKONING TABLE 5—CEREALS

Country	Cereal imports needed on an annual basis to bring consumption in deficit countries to indicated numbers of cals./head/day (1000 metric tons)					
	1800 cal.	2000 cal.	2200 cal.	2400 cal.	2600 cal.	2800 cal.
Faminaria ..	0	0	83	1069	2055	3041
Starvania ..	11	85	159	233	307	381
Hungerland ..	0	0	324	694	1064	1434
Surplustate ..	0	0	0	0	0	0

The reference tables, once prepared, would require revision only if populations changed or new estimates of pre-war consumption levels had to be introduced. The reckoning tables would have to be adjusted quarterly to the latest estimates of indigenous production, and the cereals table would have to reflect changes in non-cereal allocations. The way in which these tables would be made up is shown in the accompanying hypothetical reference and reckoning tables compiled for four imaginary countries.

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Reconstruction

ONE THOUSAND BEDS ?

FROM A CORRESPONDENT

Mr. ANEURIN BEVAN made one of his most penetrating remarks when, in the standing committee, he declared that the quality of a hospital service is determined not only by the way in which it is financed but also by the quality of the people who work in the hospital, and on their freedom from bureaucratic interference. But it is fair to ask Mr. Bevan, what does he mean by "hospital"? If he means, instead of the common connotation, a 1000-bed unit comprising many hospitals, will such a "hospital" be free of bureaucratic interference? The headquarters of this 1000-bed unit could easily become itself a focus of bureaucracy, in relation to the individual hospital.

There is grave danger that the conception of the 1000-bed unit may come to be embodied in the new hospital service without adequate examination.

ADVANTAGES AND DISADVANTAGES

First, then, what can be said in favour of the idea? It has been suggested that 1000 beds are needed to constitute a complete unit for hospital purposes, providing staff and facilities sufficient for all the various specialties to be found in a complete hospital service. It is true, too, that from most of the surveys—the South Wales survey is an instructive example which may well have had a special influence on the Minister—there emerged a clear case for grouping under one control a family of hospitals of varying sizes. The Welsh valleys need a hospital of some consequence in the principal town, with a group of smaller units strung out along the valley. There is in fact a strong case here for unified management, with proper delegation of responsibility for the smaller units to house-committees. In other parts of the country there are further examples which support the view that grouping under a single management committee is a natural and logical development of hospital organisation, leading to economical grouping of consultant staff and special departments.

But from the premise that in many cases, and from some angles, grouping is desirable, and that 1000 beds provide the most convenient unit, it does not necessarily follow that division of the country into 1000-bed units ought to be regarded as an overriding objective. Can it seriously be suggested that the principle of aggregation of units to make up 1000 beds ought to be pressed as against all other considerations, including convenience of management? For many small towns and for many suburban areas a hospital of 200–250 beds (including provision for chronic cases and for maternity wards), with perhaps one or two satellite cottage hospitals acting under its control, is much to be preferred. If units of this kind are grouped with anything and everything that may happen to be handy, or if two or three such units are grouped together merely for the sake of securing a 1000-bed unit, no advantage can be expected sufficient to offset the very real loss of convenience of management on the spot by local people.

It is one thing arbitrarily to decide what constitutes a complete unit for hospital purposes, but it is quite another thing to assert that this is the only satisfactory unit for purposes of management, irrespective of the difference in conditions in different parts of the country, and of the fact that in the great majority of cases various special functions must, for a long time to come, be provided where the facilities are at hand.

WHAT IS REQUIRED

What is undoubtedly required is machinery for ensuring that the hospital service of the locality conforms to a plan, that services and departments are not unwisely duplicated, and that patients find their way into that hospital which is best fitted to deal with them.

To achieve this it is not essential to group hospitals arbitrarily into 1000-bed units regardless of all other considerations. Admittedly smaller units may not be able to offer all the services, but the exercise by a regional board of an effective control of function (as distinct from management) will surely bring about the desired result. The size of the groups should be determined by practical considerations, in which geography and convenience of management must plainly be regarded as all-important. The provision of 1000-bed units need not be given undue weight if regional control of function is accepted as an alternative. It is the less drastic alternative, and it leaves the way open for a subsequent merger of groups if such proves desirable. It does not involve, at the outset, disturbance of personnel; and it does not involve all the friction that is bound to follow if chairmen and medical superintendents, house-governors and matrons, drawn from different hospitals, have to be thrown together in a single set-up and the one subordinated to the other.

The new service establishes conditions in which it is reasonable to hope that, given time, all will work easily together; but time is essential, and it would be disastrous to suppose that a stroke of the pen is all that is necessary to realise what must often be a slow process of approximation and unification. The circumstances will vary widely, and unification which in some cases can be achieved from the outset may in others require years before fusion is possible.

Hence the regional board, in pursuing its object of grouping hospitals into units, should proceed by persuasion rather than by coercion. It should be content to start by providing a management committee for smaller groups or even for each of the existing hospitals—rather than for what might prove to be an artificial unit based on a paper plan. The powers and duties of the regional boards in delegation to local management committees should be drafted accordingly. Against a background of regional control of finance, and regional participation in the appointment of personnel, both of the management committee and of the medical staff, there need be no fear that the Minister will lack the powers needed to bring about a complete fusion wherever such is proved, by experience of working the scheme, to be in the general interest.

INFECTIOUS DISEASE IN ENGLAND AND WALES

WEEK ENDED JULY 27

Notifications.—Smallpox, 0; scarlet fever, 994; whooping-cough, 2468; diphtheria, 308; paratyphoid, 14; typhoid, 8; measles (excluding rubella), 3741; pneumonia (primary or influenzal), 363; cerebro-spinal fever, 41; poliomyelitis, 18; polio-encephalitis, 0; encephalitis lethargica, 1; dysentery, 90; puerperal pyrexia, 145; ophthalmia neonatorum, 72. No case of cholera, plague, or typhus was notified during the week.

The number of service and civilian sick in the Infectious Hospitals of the London County Council on July 24 was 1155. During the previous week the following cases were admitted: scarlet fever, 48; diphtheria, 29; measles, 86; whooping-cough, 24.

Deaths.—In 126 great towns there were no deaths from enteric fever or scarlet fever, 4 (0) from measles, 8 (1) from whooping-cough, 2 (0) from diphtheria, 38 (1) from diarrhœa and enteritis under two years, and 1 (0) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 285 (corresponding to a rate of 31 per thousand total births), including 37 in London.

Sir Comyns Berkeley from his estate of £123,000 has made a residual bequest to Gonville and Caius College, Cambridge, for the provision of medical fellowships.

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Public Health

Milk in Schools

FROM Aug. 6 free milk will be provided for children in grant-aided schools, including special schools, and also for full-time students under the age of 18 attending grant-aided courses of further education. The Minister of Food has asked distributors to return, at the beginning of the autumn term, to the use of $^1/_3$-pint bottles supplied with straws, and though it may not be possible to provide enough bottles and straws at the outset, measures are being taken to overcome the shortage. The amount of $^1/_3$ pint daily for each child will be increased as soon as milk-production allows. At boarding and special schools for delicate children the amount will be $^2/_3$ pint daily. The milk will be sold by the dairyman to the local education authority, and will be charged to the Ministry of Food. To avoid waste, suppliers are to be told of day-to-day variations in quantities required; and when, despite careful ordering, there is a surplus, it is to be given to children who seem likely to benefit from it. "All concerned will recognise that school milk is provided for the children; it may not be disposed of to anyone but school-children without express instructions from the Food Office." Milk may be provided during holidays and at weekends if it is drunk at school or at a centre approved by the local education authority. Milk may also be carried home to sick children. The Ministry of Food will authorise a change of dairyman if the medical officer of health withdraws his approval of the source and quality of milk supplied, or where a change is necessary to get heat-treated or T.T. milk.

Welfare Foods

The Government has decided to continue the supply of welfare foods, with some slight modifications, as a supplement to family allowances, though the foods will not be restricted to those who are entitled to allowances. The Minister of Health asks welfare authorities to encourage a larger take-up. The foods offered remain the same—milk (either liquid, or national dried milk), orange juice, and cod-liver oil, and vitamin A and D tablets for pregnant women. Since July 21 fresh milk has been supplied at 1½*d.* a pint instead of 2*d.*, and dried milk at 10½*d.* a tin instead of 1*s.* 2*d.* Cod-liver oil, and vitamin A and D tablets, are provided free; and free milk and orange juice are allowed automatically to people receiving public assistance. Applications for free supplies from others will be decided by the Assistance Board. When an applicant for free milk and orange juice says that her husband is receiving public assistance the local food office is to accept her statement and provide the foods at once; and the public-assistance officer will then be asked to confirm the facts.

The Government are anxious to ensure that the welfare foods are eaten by those for whom they are intended. When foods go into the common larder it may be by thoughtlessness as much as by intentional misuse of them. The welfare authorities are asked to do all they can to secure the proper use of foods, through the educational work of medical officers at welfare centres, and of midwives, district nurses, and health visitors. Any known cases of misapplication of foods should be reported to the Ministry.

Outbreak of Typhoid Fever

At Aberystwyth by Tuesday 58 patients had been admitted to hospital suspected of typhoid, and the diagnosis had been confirmed in 31. These figures do not include visitors who have become ill since returning home, and the circumstances suggest that an appreciable number of these, widely scattered over the country, will be notified during the coming week.

The conjectured date of infection of the initial cases in the outbreak was July 11. The first patient was admitted to hospital on the 27th. The food histories of the first 22 patients implicated ice-cream and exonerated other aliments. The manufacturer and vendor of the ice-cream gives a history of typhoid fever in 1938 and his Widal titre (Vi 1/80) strongly suggests that he is still excreting *Bact. typhosum*. This source of infection was stopped on July 29; further cases from it may therefore occur until the middle of August.

In England Now

A Running Commentary by Peripatetic Correspondents

IT would be a good thing if members of the medical staff or governing body of a hospital were occasionally to attend as outpatients or be admitted as inpatients—of course incognito. Only in this way can they gain a real insight into the working of the admission procedures and realise their shortcomings. Sometimes they might have a pleasant surprise. There is an authentic story told of a well-known millionaire who, wandering alone round the outpatient department of a hospital in which he was interested, asked the lady in charge of the patients' canteen how much he would have to pay for a bun. She replied compassionately: "A penny each, but if you can't afford a penny you can have it for nothing."

Outpatients usually have to wait long hours before being seen by a member of the staff, for the appointment system has not yet been generally adopted and is often difficult to arrange. And patients still do not always receive that politeness and consideration to which the sick person is entitled. So many junior officials, "drest in a little brief authority," exercise that authority in a Hitlerian manner. The same criticism, mutatis mutandis, applies to the reception of inpatients at some of the larger hospitals. I speak feelingly because recently a friend of mine, suffering from pneumonia, had to be admitted to the wards of a well-known hospital. On arrival at the hospital the patient was made to wait for a considerable time in a dark, cramped, and very ill-furnished and forbidding room without a word of comfort being offered. The apparent neglect to deal promptly and kindly with one who was gravely ill made a very bad impression on this patient. Surely every hospital should have proper rooms and suitable persons to receive and welcome the arriving patient. It is unfortunate that the human and humane touch is so often lacking at the hospital entrance. Just compare this with the account given me by one who has recently visited one of the modern Swedish hospitals:

"On entering the hospital there is an information bureau where all directions are given and questions answered. The reception hall is superb. Patients' and visitors' hats and coats are taken on entering and a ticket given. A delightful fountain in the centre of the hall is intended to give an inviting impression, and there is a lunch counter where an all-day service is provided."

It is perhaps too much to hope that this method of reception will be equalled in this country for some years to come; but something should be done, and done quickly, to improve the method of reception of patients. Why not have a few trained and kindly receptionists to welcome patients and conduct them to their destination. Absurd and impracticable? Of course, but most necessities of today were impracticable yesterday.

* * *

If you, gentle reader, have ever visited cases in a smallpox hospital, and then twelve days after the last visit, when staying with relatives, developed a P.U.O. with backache, you will understand my mental anguish.

The first reaction was to search anxiously for a harmless cause. A sore throat, neck rigidity, abdominal pain, or dysuria were all wished for. Never could a rusty sputum or dyspnœa be so desired. Acute leukæmia would have been welcome.

Their absence caused a feeling of doom. A Service vaccination would give me some protection, but a doubtful take on my wife would leave her scarred and pitted. An unhappy fate for both of us. Perhaps I would even be thought to blame, and would have to hide the mirror for the remainder of our lives.

The death of the unvaccinated host and hostess, their daughter and small child, seemed a small cloud in the sky compared to the reproaches my feverish brain saw so distinctly in the future from their bereaved. Was it my duty to attend the cremation?

The fourteenth day was spent in papule-hunting. The normal soles and palms are made of incipient papules for those who have the eyes to see. Each inspection made my near ones' doom seem closer. All was however to end well; what was thought to be the mere

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catch in the throat of a potential murderer developed, aided by the doctor's and patient's prayers, into a pharyngitis, responsive to sulphathiazole.

The Minister of Health is abolishing compulsory vaccination; but even if he makes it illegal, I shall procure black-market lymph with the utmost regularity.

* * *

One has only to glance at any newspaper headlines of recent weeks to realise that there are many battles in progress in the name of nationalism—battles of words only, fortunately, although occasional armed clashes have taken place. It all seems rather ridiculous when one knows from experience that individuals of diverse nationality can live together peaceably—as in America, for instance, or, on a smaller scale, in this hospital, with its staff of English, African (West, East, and South), Arab, German, and Italian, and with Polish, French, and Indian patients (among others), in addition to those already mentioned. No conflicts occur, because all have a common object, aside from selfish interests, which is the welfare of the patients. People are easily inflamed by real or imaginary injustices to their persons or beliefs. Would not people be better off if their minds were not constantly inflamed by the stressing in newspapers of crimes done in the name of nationalism? This trait is very pronounced in newspapers in the English language in India and the Middle East. A newspaper editor should have a sense of responsibility to the public; but ideals of duty seem to have disappeared with the end of the war. Very odd.

* * *

I quite appreciated the physiology and significance of binocular vision when I was lectured on it. But nobody ever told me about binaural hearing. Its existence has been brought home to me by a violent otitis externa. With my left external auditory meatus bunged up (sorry, occluded) either by the torrential discharge or by the combative medicaments, I have found the world a changed place. Pitch and timbre are strangely altered qualities. The Beethoven Violin Concerto isn't Beethoven any more—except perhaps a very old recording on an even older gramophone. Voices can no longer be identified and are differentiated into two categories only—the soft and the inaudible. The tendency to turn the good ear towards any source of sound extends itself, when one is not listening to anything in particular, to an almost irresistible impulse to maintain a slow, continual rotation like those big batteries of tuba-shaped hoojahs used by the Ack-Ack listening posts.

I have always been quite smug at being able to shave without a mirror if necessary. So I was sadly shaken when I found myself carving slices off my left cheek. Evidently I have been shaving by ear all these years. Localisation is a great problem, particularly where conversation is concerned. At best I would have time to look round and see whose lips were moving. At worst I would be too late and would have to sit among unmoving faces, afraid to ask who had spoken, wondering indeed if I were at last hallucinating. The deaf are notoriously suspicious and full of ideas of reference. And I am in the throes of a rather unique psychiatric entity—a unilateral paranoia. Stand by my right and you are my friend. Move round to the other side and you become sinister in both senses of the word—a plotter, a schemer, one of the gang, mouthing signs and whispering instructions to bring about my ruin. Only one boon has this trouble brought me. If I sleep with my good ear next to my pillow I get a full night's sleep. The wardmaids can kick buckets up and down the corridors at any hour of the dawn for all I care.

* * *

Arthur Hugh Clough's *Decalogue* must be the most biting satire on humanity's interpretation of the Ten Commandments that has ever been written. But medical authors persist in quoting the sixth couplet, "Thou shalt not kill: but need'st not strive officiously to keep alive," as a warrant for relaxing attempts to prolong life in distressing and incurable disease. The latest offender is the author of an otherwise admirable lecture on the Art of Medicine in Relation to the Progress of Thought. It is requested, as we say in the Army, that future authors will not use this particular quotation until they have read, marked, learned, and inwardly digested the spirit of the poem.

Letters to the Editor

HOMOLOGOUS SERUM HEPATITIS

SIR,—To the many causes of jaundice is now added acute or subacute hepatic necrosis due to parenteral therapy, by toxic agents in needles, syringes, homologous serum, and plasma. Tracing cases due to this cause will be easier when practitioners are alert to its consideration in all cases of jaundice, and take a history of the case with parenteral therapy in mind, covering a period of 50–150 days before the first symptoms of an illness which includes jaundice.

This aspect emphasises one of the valuable points in the letter from Dr. W. H. McMenemey in your issue of June 29—i.e., the value of notification of jaundice of doubtful origin, including infective hepatitis. Notification should be a useful supplement to the statistical surveys of the sequelæ of parenteral therapy which may be made. That the results of such surveys may show appreciable mortality is suggested by necropsies in Preston on six such cases.

The six patients left hospital normally convalescent from their primary disability. Four were readmitted many weeks later and a few days before death. Two died at home and were reported to H.M. coroner primarily because of accidental injuries which caused their previous admission to hospital.

Unless the mortality of this disorder is unexpectedly high, these six deaths may indicate 200–300 non-fatal cases in the same area, of which there is no record.

Case	Year	Sex	Age	Reason for giving plasma	"Incubation" period (days)	Final illness (days)
1	1942	M	22	Partial gastrectomy, peptic ulcer	69	4
2	1944	F	33	Shock after manual removal of placenta	125	2
3	1945	M	46	Partial gastrectomy, peptic ulcer	64	20
4	1945	M	73	Traumatic shock, multiple fractures	67	26
5	1946	M	42	Partial gastrectomy, peptic ulcer	45	22
6	1946	F	35	Traumatic shock, multiple fractures	76	20

Only the last 3 cases came to inquests. The group again shows that, as in epidemic hepatitis, the illness can be very short. In the same period of time 7 necropsies have been done on cases of epidemic hepatitis, in 2 further fatal cases of which disease necropsy was refused.

Preston. F. B. SMITH.

OUR HOUSES

SIR,—I should like to say "thank you" for your leader of July 27, entitled The Cult of the Obsolete, which was sadly needed.

It is true to say that in the matter of building construction, and domestic and sanitary fittings, this country is a good fifteen years behind the times, and shows no signs of catching up. We also appear to be completely incapable of creating beauty. I make these statements as a result of two years in France, Belgium, Holland, and Germany with the R.A.M.C. The last three countries are a long way ahead of us in housing, especially Holland.

A typical pre-war Dutch house is finely proportioned, with large and long windows, and, more likely than not, a balcony. It is pleasant to look at, colourful, yet not vulgar. Dutch architects can do what ours cannot—they can create beauty. The inside of the house has also been very much the architect's concern. Here are well-proportioned and well-lit rooms, fitted cupboards, and a modern kitchen and bathroom. An inviting staircase curves up from the spacious, square-shaped hall. There are always central heating and pipe-insulation, and nearly always cavity walls.

Perhaps the difference between our approach and theirs is best illustrated by taking a small point—the way washbasins and baths are fitted in Holland and Germany.

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In this country, as you know, two holes are knocked in the wall for the hot and cold water, from which two serpentine pipes writhe up to the respective taps. The waste-pipe with its out-of-date U trap looks like a switchback. If we wish to hide this, we must go to the expense of a pedestal basin—a thing unknown on the Continent. Contrast this with the position in even the cheapest houses in the above two countries. Here the hot and cold come through the wall and end in two little chromium-plated unions, each with a tiny stopcock of its own. From these, two plated or copper pipes run up in a straight line to the taps. A modern chromium or porcelain bag-trap replaces the unsightly U. The whole effect is neat and pleasing; there is no need to cover it up. This design is almost unused here; even our most modern London hotels cannot show plumbing as neat as a German workman's pre-war house. Baths in Holland and Germany are never fitted, even in hurriedly built military hospitals, without being built in, usually with a tiled surround. There is *always* some sort of a shower. This usually takes the form of a simple mixing faucet fixed in the middle of the far side of the bath. From the upper side of this a flexible pipe runs with a rose on the end which is hooked to the wall when not in use. It is simple, mass-produced, and effective, and costs a few shillings.

The reason for our backwardness lies, I think, in two national failings.

1. We will *not* bother ourselves over what we think are unimportant details. We cannot grasp that the way a basin is fitted or pipes insulated *is* important.

2. We are still afraid of beauty. Those who live in beautiful houses with colourful rooms, well-designed furniture, and gay pictures are still regarded as a little odd. For a long time they were even thought to be not respectable.

So we continue to put up with shoddy plumbing, inefficient heating, and no insulation. We also fill our houses with unbecoming furniture, dull pictures, nightmare lampshades, fantastically ugly ornaments, and the rest of the trash to be seen in furniture stores today.

Are we afraid of being thought "different"? Poor fools that we are—we are already "different" by fifteen years of progress from the rest of Europe!

London, S.W.7. PETER NASH.

ANOXIA AND RENAL FUNCTION

SIR,—In his letter of March 9, Professor McCance questioned our inclusion of the renal failure associated with alkalosis within what we have called the syndrome of "renal anoxia." He criticised our contention that there may be "alterations in renal hæmodynamics . . . and a redistribution of blood-flow through the kidney" in such conditions and finds it "difficult anatomically to visualise such changes in the mammalian kidney, in which the tubules have no separate blood-supply." He also expressed the view that it is not yet time to find a single explanation for "this interesting and widespread syndrome" and that it would be better for the present to "concentrate on the collection of facts." May we crave a little more of your space to restate our case?

In our original paper on renal anoxia [1] we pointed out that in many otherwise differing conditions—for example, blackwater fever, surgical shock, and cholera—there may develop a common picture of renal failure usually accompanied by oliguria or anuria. We suggested the collection of such renal syndromes within the term "renal anoxia" (as an alternative to the term "tubulo-vascular syndrome" previously suggested by one of us [2]) because we thought that the kidney changes involved were produced by lack of oxygen, resulting in most instances from changes in the renal blood-flow. We believe (1) that in these conditions there is a reduction in the total blood-flow through the kidney, (2) that this is accompanied by a redistribution of the blood-flow within its component parts, and (3) that in consequence the cortex of the kidney suffers from anæmia and therefore from anoxia, which may be either relative or absolute.

1. *Reduction in Total Renal Blood-flow.*—We emphasised in our paper that a "diminished renal circulation is probably a constant factor" in the production of the syndrome. In this respect we have the support of Cournand [3] and Lauson et al.,[4] who investigated, by means of renal clearances, the renal blood-flow in cases of non-crushing surgical shock, and deduced from their experiments that there occurred in these conditions a reduction of renal blood-flow much greater than could be accounted for by any change in hydrostatic blood-pressure. Lauson et al. sum up the position as follows: "This investigation confirms the hypothesis that the urinary findings in shock, i.e., oliguria or anuria and loss or impairment of concentrating power" (the syndrome of renal anoxia) "are the result of decreased circulation through the kidney." Such reduction in total blood-flow through the kidney has been postulated by other writers. For example, Darmady and his co-workers [5] suggest that renal failure in traumatic shock may arise from anoxia resulting from vascular spasm or from hypotension, or both. Trueta [6] attributes traumatic anuria to reduction in the blood-supply of the cortex "due to overstimulation of vascular nerves," and also suggests that this diminution of renal flow may be brought about by arterial spasm. Scarff and Keele [7] found that a general tubular lesion histologically resembling that seen in crush injury could be produced in rabbits by total obstruction of the renal flow for an hour or more, and in a series of experiments designed to study the action on the kidneys of circulating blood pigments, Yuile and others [8] noted that a non-specific "functional abnormality of individual nephrons," indicated histologically by lesions of the tubules, could be produced in rabbits either by renal ischæmia or chemical poisoning.

What has been said provides good evidence that there is a reduction of total renal flow in traumatic anuria (which we consider an example of the wider syndrome of renal anoxia) and that experimental interference with renal blood-flow in rabbits can produce renal changes similar to those found in man.

2. *Redistribution of Blood-flow within the Kidney.*—We admit that such redistribution has not yet been clearly demonstrated in patients suffering from the renal syndrome under discussion. Our present experimental techniques are probably not sufficiently delicate to show this in the living patient. Nevertheless, the usual histological picture seen at necropsy is consistent with the view that the cortical blood-flow has been mainly diverted from the cortex to the medulla.[9] The pale cortex with relatively anæmic glomeruli and the engorged medullary vessels often described in these conditions,[2 10] together with the type of degenerative lesions seen in the tubules, support this contention. Moreover, the changes observed in renal clearances of diodone and inulin in dogs rendered hypotensive by bleeding led Corcoran and Page [11] to the view that under these circumstances the blood-flow was probably distributed *irregularly* through the renal vascular bed.

We believe that the evidence outlined above favours our view that, in the renal anoxia syndrome, there occurs some redistribution of the blood-flow within the kidney. The mechanism by which such redistribution is brought about is a more controversial matter. There is evidence to suggest however that the blood-flow to portions of the renal cortex may differ to some extent from that of the rest of the cortex, both anatomically and functionally. The information available regarding the minutiæ of the renal blood-flow is very largely based on the study of fixed tissue and it is unlikely that the dynamics of the renal circulation will be elucidated until better techniques enable us to study the living functioning organ, in much the same way, for example, as Knisely [12] examined the splenic flow. Nevertheless, there are suggestive indications in the published work. Bowman's dogmatic teaching that all blood must traverse the glomeruli to reach

1. Maegraith, B. G., Havard, R. E., Parsons, D. S. *Lancet*, 1945, ii, 293.
2. Maegraith, B. G. *Trans. R. Soc. trop. Med. Hyg.* 1944, **38**, 1.
3. Cournand, A., et al. *Surgery, Chicago*, 1943, **13**, 964.
4. Lauson, H. D., Bradley, S. E., Cournand, A., Andrews, V. V. *J. clin. Invest.* 1944, **23**, 381.
5. Darmady, E. M., Siddons, A. H. M., Corson, T. C., Langton, C. D., Vitek, Z., Badenoch, A. W., Scott, J. C. *Lancet*, 1944, ii, 809.
6. Trueta, J. *Ibid*, 1945, ii, 415.
7. Scarff, R. W., Keele, C. A. *Brit. J. exp. Path.* 1943, **24**, 147.
8. Yuile, C. L., Gold, M. A., Hinds, E. G. *J. exp. Med.* 1945, **82**, 361.
9. Maegraith, B. G., Findlay, G. M. *Lancet*, 1944, ii, 403.
10. Witts, L. J. *Ibid*, 1929, i, 1279.
11. Corcoran, A. C., Page, I. H. *J. exp. Med.* 1943, **78**, 205.
12. Knisely, M. H. *Proc. Soc. exp. Biol., N.Y.* 1934, **32**, 212.

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the tubules and so be distributed from the glomerular efferent vessels has been often challenged—e.g., by Ludwig and Isaacs, both of whom claimed that non-glomerular vascular twigs, arising from the interlobular arteries or from the glomerular afferents, also supply the tubules. The presence of these vessels has recently been confirmed in animals, but their direct functional importance in man has not been settled. Other small vessels arising from the glomerular afferent arterioles and running either to the stellate plexus or directly into the medulla (true arteriæ rectæ) have been described in rabbits.[13] In this connexion it has been shown that hypertension in rabbits resulting from constriction of the renal artery can be abolished by the establishment of collateral circulation developing from the perirenal tissue. Such circulation could be established only through non-glomerular vessels connecting the stellate plexus with the main renal circulation. A more important non-glomerular supply to the tubules has been described by Spanner,[14] who demonstrated arteriovenous anastomoses in the human renal pelvis, cortex, and subcapsular plexus. According to Smith [15] these "anastomoses in the pelvis are so connected as to shunt blood from the interlobular arteries directly into the corresponding veins . . . they afford a mechanism for the direct perfusion of the tubules at a time when glomerular circulation is largely arrested." They may also form a mechanism for shunting blood across the medulla, so by-passing the cortex.

These and similar observations, though perhaps not individually convincing, collectively provide evidence of a non-glomerular circulation in the renal cortex. There thus exists the possibility of differential adjustments of the flow within the kidney, either through specialised vascular channels, such as those referred to above, or as the result of active variation in the calibre of the vessels concerned.

The manner in which such variations in renal flow can be initiated and sustained has not yet been determined. Lauson and colleagues [4] interpreted their observations in traumatic shock in terms of increased renal vascular resistance. As mentioned above, Darmady et al.[5] and Trueta [6] have also suggested that vascular spasm may be concerned in the general reduction of renal flow in such conditions. Trueta believes that such spasm may arise reflexly from overstimulation of the renal vasoconstrictor nerves, with which the kidney is richly supplied.[16] Darmady et al. have also pointed out that reduction in renal flow in traumatic shock may result in part from hypotension within the organ. Such hypotension is not always present in clinical states in which the renal anoxia syndrome may develop, so that it is more likely that some active vascular change, such as described above, occurs in the kidney in these conditions.

3. *Anæmia and Anoxia of Renal Cortex.*—The evidence in favour of the view that the functional and pathological changes accompanying the renal anoxia syndrome are related mainly to anoxia of the cortex has been set out in detail elsewhere.[1,2,9] In the clinical development of any individual case of the renal anoxia syndrome, the redistribution of the intrarenal flow will determine the onset or otherwise of anuria (i.e., the failure of glomerular flow) and the degree of cortical anoxia will determine the degree and permanency or otherwise of the interference with tubular function. In most examples of the syndrome we believe the changes in renal flow are initiated by extrarenal conditions—for example, the general peripheral collapse seen in shock and blackwater fever. Here the renal functional failure supervenes on vascular failure. In some cases, however, the process may be reversed and changes developing within the kidney may reflexly initiate alterations in renal flow.[13] The renal failure in alkalosis is a case in point. In the early stages we picture [16] an increase in glomerular flow unaccompanied by corresponding reduction in total renal flow, and brought about possibly by constriction of glomerular efferent vessels. As the alkalosis develops the total renal flow is reduced, and in this stage the tubules may suffer from shortage of oxygen which is not so much absolute as relative. If, for instance, during the excretion of excess alkali, the demand for oxygen by the tubular epithelium is increased at a time when the blood-supply is being reduced, a state of relative anoxia will arise, resulting in tubular inefficiency and thus explaining the noxious effects of alkalosis on tubular function.

The development of anuria (as distinct from renal *tubular* failure) in alkalosis is more difficult to explain, as Professor McCance points out. We believe that anuria, in all forms of the renal anoxia syndrome, results primarily from failure of glomerular flow. Such failure in the case of alkalosis may possibly arise as follows: As the normal blood-supply of the tubules is cut down (by constriction of either non-glomerular arterioles or the efferent glomerular vessels, or both) the condition of anoxia in the tubules worsens. The result of this is to bring into action such mechanisms as those described by Spanner for the direct perfusion of the tubules by the opening up of arteriovenous anastomoses. Such opening up of anastomoses might itself, by a process of over-compensation, precipitate anuria by diverting blood from the already restricted glomerular circulation.

13. Macgraith, B. G., McLean, F.L. *Brit. J. exp. Path.* 1942, **23**, 239.
14. Spanner, R. *Verh. anat. Ges. Jena*, 1938, **45**, 81.
15. Smith, H. W. *Harvey Lect.* 1939–40, **35**, 166.
16. Army Malaria Research Unit, *Lancet*, 1945, ii, 701.

CONCLUSION

We are sensible of the deficiencies in the evidence we have presented here and elsewhere in our attempt to find a common factor in such a widespread and complicated syndrome as that of renal anoxia. We agree with Professor McCance that the further collection of facts is necessary, particularly with regard to tests of kidney function in clinical examples of the syndrome. We believe, however, that our attempted simplification of the problem will make such factual collection easier and give some direction to it.

BRIAN MACGRAITH.
R. E. HAVARD.

Department of Tropical Medicine, Liverpool.

NEW WORDS ABOUT OLD AGE

SIR,—Diseases of old age and the care of the aged have recently become subjects of increased interest to the medical profession. There is, however, a certain vagueness as to the meaning of some of the words used in this connexion. For example, the author of a book on medical aspects of growing old has confused "gerontology" (the science of old age) with "geriatrics" (the care of the aged) in his very first sentence. Both these terms originated in America. The former has been popularised by the writings of Stieglitz; the latter, coined by Nascher in 1909, has spread owing to its propagation by Thewlis. Of course, the parent of both words was used in 1724 when Sir John Floyer published his *Medicina Gerocomia*. "Gerocomy" (defined in the *Shorter Oxford English Dictionary* as "the science of the treatment of the aged") seems too good a term to be abandoned and might be employed technically for those aspects of the care of the aged which are not strictly medical, such as accommodation, clothing, and other social or administrative activities. In this way a gap would be filled in the nomenclature of old age.

Purley, Surrey. TREVOR H. HOWELL.

DESOXYCORTONE AND ARTHRITIS

SIR,—I must apologise to Professor Selye (June 22, p. 942) for having omitted to mention the weights of the rats used in my experiments. As stated in my article, however, his corresponding experiment was repeated "in detail," which was intended to indicate that animals of the same weight (30–50 g.) were used. It is explicitly stated in my paper that "subcutaneous injections were started in the selected rats." Professor Selye claims that my results do not lend themselves particularly well to statistical analysis. The primary object of my experiments was to determine the relation of desoxycortone to arthritis, and for this purpose two groups of 5 rats, one injected and the other non-injected, were used. The incidence of arthritis in Professor Selye's corresponding experiment was 3 out of 8 (more than 1 out of 3). If, then, 1 : 3 is the chance of procuring arthritis, there are 211 out of 243 chances that at least 1 out of 5 rats will get it, and only 32 out of 243 chances that none will get it. Hence the incidence of arthritis in my experiment (0 out of 5) is suggestive compared

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with that in Professor Selye's experiment. The protein content of the diet used in my experiments was approximately 20%.

Dr. Denys Jennings (July 20, p. 101) is, I feel, confusing the issue by a misapplication of statistical procedure to a perfectly valid statistical analysis. I quite agree that the adrenalectomy +D.C.A. group of Selye's experiment I, when arranged in a 2 × 2 contingency table, at first appears to be significant. But Dr. Jennings states that the numbers of animals used in Selye's experiments are small. Because they are small many of the expected or theoretical numbers obtained from the contingency tables are less than 5. Therefore the value of P determined from such a chi square test is open to doubt, for the tendency is for the test to make the result appear more significant than it really is (D. Mainland: *Treatment of Clinical and Laboratory Data*, 1938, p. 91). The obviation of this difficulty is by grouping of results, the procedure which I adopted. Apart from this fact, however, the data of experiment II cannot be ignored, and should be considered in conjunction with those of experiment I.

Dr. Jennings claims that the results of experiment I are significant even when a more accurate mathematical technique is employed. If the first two groups of experiment I are combined as in the following contingency table—

	Arthritis	*No arthritis*	*Total*
D.C.A.+adrenalectomy and D.C.A.+thyroidectomy	8	12	20
D.C.A. only	1	7	8
Total	9	19	28

then the method mentioned by Kendall (*Advanced Theory of Statistics*, 1943, vol. I, p. 304) can be applied. This is an exact method not depending on the chi square test, and shows that, given the marginal totals of 9, 19, 8, and 20 shown in the table, there would be a probability of 0·17 that the incidence of arthritis among the 8 "D.C.A. only" rats should have been 1 or 0. The conclusion suggested is that "there is nothing here to reject the hypothesis that adrenalectomy and thyroidectomy exert no influence on the incidence of arthritis." This conclusion is greatly reinforced by the results Professor Selye gives for experiment II. I am also dubious of the criticism Dr. Jennings makes of my experiments on biological grounds. The rats I used were of the Wistar strain, which are probably the same as those used by Professor Seyle.

I must thank Mr. D. G. Champernowne, of the Institute of Statistics, Oxford, for his help in the statistics of the original paper and of this communication.

Department of Human Anatomy, University Museum, Oxford. R. G. HARRISON.

NURSING

SIR,—The proposed health services will call for thousands upon thousands of nurses, and the question which perturbs many of us is, can we get these men and women by offering large salaries and good conditions? I contend that of all the occupations, that of nursing calls for "something" quite unrelated to wages and conditions; Mr. Cohen's inquiries endorse this fact. Unfortunately the evidence is that the more rapidly we move to the practice of so-called equalitarianism, the more materialistic and the less spiritual or vocational we get. With good conditions and wages we shall get all the lay staff needed to run the hospitals, but it is most doubtful if we shall get half the nurses needed. Of course many more women will be attracted to the profession, but of the entrants too many will give up before completing their training, through finding out that they just can't stick it, or through marriage. Before and between the wars there was no particular difficulty in staffing hospitals and municipal institutions, even though conditions and wages were awful, because there were many more people with the vocational and spiritual content; today this spirit is as dead as the dodo and we are all looking for and advocating more wages and less work; and nursing is hard and often disagreeable work.

St. Osyth. R. E. CLARKE.

AVOIDABLE CANCER

SIR,—In connexion with your annotation of July 27 the following facts may be of interest to your readers. (1) Mineral oil can be, and is being, produced which is non-carcinogenic. (2) A non-carcinogenic mule spindle mineral oil known commercially as white oil is on the market. (3) Exhaustive tests on the skin of mice indicate that it is no more likely to cause tumours in mice than olive or sperm oil. (4) Coal as such is not carcinogenic, but some of its products will be if it is destructibly distilled above a certain temperature. (5) So far as is known, any organic matter will yield carcinogenic products if destructibly distilled at a high enough temperature. It cannot, therefore, be considered odd that the products of coal and petrol which have lain under the earth for centuries should have carcinogenic properties.

Southwick, Sussex. J. M. TWORT.

UREA-FORMALDEHYDE RESINS IN ORTHOPÆDIC SURGERY

SIR,—When used in setting fractures plaster-of-paris suffers from many defects, including impermeability to X rays, lack of resistance to water, and an inherent brittleness. Urea-formaldehyde synthetic resin adhesive has none of these failings, but much remains to be done to make it a practical contribution to orthopædic surgery. Preliminary trials have been carried out as described here, and it is hoped that from these data further development will be possible.

The urea-formaldehyde resin 'Casco-Resin P' was selected because it has a viscosity suitable for impregnation and a low free-formaldehyde value, and is fairly highly condensed, thus requiring relatively low acidity to harden it at room temperature. The solids content is 60%. Urea-formaldehyde resins may be hardened at room temperature by the use of acid or acid-developing catalysts or hardeners; but they are fundamentally thermo-setting, and full condensation is best obtained by the application of heat, either by direct conduction, infra-red radiation, or high-frequency induction.

The first experiment was the preparation of a bandage for a supposedly fractured wrist. The wrist was treated with an anti-dermatitis cream, and two or three turns of a 2-in. white open-wove bandage were put round it. Another 2-in. bandage was immersed in a beaker containing casco-resin P 100 parts by weight and hardener 'M-1' 10 parts by weight. The bandage was unrolled in the liquid and drawn out between two glass rods to remove the surplus resin. It was next wound on the wrist and baked in front of an electric fire for half an hour, at the end of which the outer layers of the bandage had hardened, thus giving support and rigidity. Next morning the bandage was hard and rigid throughout and, though only $^1/_8$ in. thick, gave as firm support as a much thicker and more cumbersome plaster-of-paris bandage.

Several of these bandages were prepared, and in some cases the "patients" took hot baths, immersing the bandage without any special precautions, and there was no softening or reduction in strength. The bandages were easily cut off with shears, and there was no sign of skin irritation or dermatitis.

Casco-resin P requires an acid medium in which to harden and become rigid, a pH lower than 5·5 being usually needed. This acidity tended to destroy the cellulose of the cotton bandage at the edges, where thin layers became very brittle. To overcome this, experiments were carried out with thin flannel bandages, and the protein nature of the wool was much more resistant to acid. A notable feature of these bandages was their resilience, coupled with strength and rigidity.

The results of this work were shown to a doctor, who suggested the production of light-weight rigid jackets or spinal ailments.

One of his patients had collapse of the spine due to a malignant growth and had recently been fitted with a support made of steel and leather. This support was rigid, heavy, and in no way moulded to the patient, and the discomfort of wearing such a support was accentuated by scars of operations for kidney trouble. It was decided to mould a back support to the shape of the patient, leaving slight hollows

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at the sites of the operation scars to prevent pressure. Six shaped pieces of thin woollen material were impregnated with the resin/hardener mixture, which has a usable life of 1 hour at 60° F. The impregnated pieces were hung up to dry for 3/4 hour, at the end of which the resin had become tacky and tended to gel. The patient was then laid on a couch, with supports so placed that the back was as near to the natural upright position as possible. The back was treated with a barrier cream and plain unimpregnated cloth laid on. A piece of gamgee tissue was placed on the site of the operation scars to provide the necessary packing. The impregnated cloths were then laid on one at a time, care being taken to shape them to the back. When the complete six had been assembled, heat was applied with six infra-red lamps until sufficient rigidity had been produced in the support to bond the laminæ together and allow of removal without distortion; this took about 3/4 hour. The finished article was rigid, resilient, light, shaped to the patient's back, and easily cut with a fretsaw and machined with a small milling tool or file. One layer of fabric had wrinkled, and this ridge was readily machined out. The hollows caused by the gamgee tissue prevented any pressure on tender spots. Straps and a supporting belt, inserted during the preparation, secured the support in position.

The above method and the final product had two obvious defects: (1) the long time taken to harden the resin in situ, with the discomfort of the patient in maintaining that position; and (2) the moulding taken of a person lying down did not exactly correspond with the upright position, particularly at the base of the spine. To overcome these defects, a cast was made with plaster-of-paris bandages, with the patient standing. From this cast a positive was made and a support prepared in exactly the same way as before, except that the support was left at room temperature overnight, so that by next morning the layers had hardened and been bonded together. The moulding could have been removed then, but it was known from experience that at this stage the resin was liable to large dimensional changes and distortion; it was therefore strapped to the plaster cast and baked in an oven at 140° F for an hour and allowed to season at room temperature for two hours, at the end of which the resin had been completely "cured," and on removal from the plaster cast the moulding remained rigid and was not subject to warping or twisting. The moulding was trimmed, the edges were bound with adhesive tape, and the appliance was given to the patient for trial. The fit was perfect, particularly round the waist, where the shaped moulding could give support; the raised parts eliminated any pressure on the tender spots; and the apparatus weighed only 10 oz. as against 3 1/2 lb. and 5 1/2 lb. for the two leather and steel appliances previously fitted.

This work has been somewhat crude and spasmodic, but it has established the possibility of using the urea-formaldehyde resins in orthopædic surgery to produce lighter appliances tailored to each patient.

I wish to thank Messrs. Leicester, Lovell & Co. Ltd., of Stroud, Glos., for whom the work was done, for permission to publish the results.

Leicester. H. A. COLLINSON.

RESEARCH ON TUBERCULOSIS

SIR,—In the course of correspondence in the *British Medical Journal* I have suggested (July 20, p. 101) that the profession itself should create an Institute for Tuberculosis Research. My reason for making this suggestion is that I fear that if we wait for the Government to found such an institute we may have to wait for many years. The scope and method of its work cannot, of course, be decided without knowing the views of those interested, and I am anxious to discover what support the project might secure. May I ask your readers who are attracted to the idea to let me know (*a*) that, in principle, it has their support, and (*b*) what sum they might annually be prepared to subscribe if called upon to do so? If within the next few weeks there is an adequate response, a meeting of supporters will be called—the expenses of which I shall gladly defray. I believe that if such a scheme were initiated by the medical profession it would be largely supported by public bodies and members of the public.

A. G. NEWELL
Medical Officer of Health for Blyth.
22, Marine Terrace, Blyth, Northumberland.

Parliament

ON THE FLOOR OF THE HOUSE

THE House is up, and Ministers and members seem to be scattering over most of the habitable globe. Many are going on "missions" of one kind or another, and there is talk of a look-see into the conditions of serving officers and men in various different theatres of operations—or rather, theatres of occupation. There have been growls from many theatres and some of the growls have come from the medical services.

A Supply day last week was devoted to the Control Commission in Germany. A recent committee had reported that the citizens of this country are paying for civil government and goods and services supplied to Germany something like £80 million a year. And though, as the Chancellor remarked in the debate, we learned after the 1914–18 war the futility of asking for reparations from the enemy, we did not expect that we should ourselves be paying reparations to Germany like this. Nevertheless we are getting good value for the payment in the British zone. For after the most disastrous war in history, with the destruction of houses, and (even more important) of railways and means of communication, we have got the zone controlled without either epidemic disease or civil commotion. The Germans were adequately fed until March of this year, and their period on the low-ration scales which they imposed on the French and the Dutch during the occupation is not likely to last any longer than in France or Holland. There was much criticism of the failure of the four zones in Germany to combine, and much criticism directed, especially from the Conservative benches, against the Russian zone. And there was a plea by Mr. Lyttelton, as chief Opposition speaker, for handing over "the details of the government of Germany" to the Germans. He accused the Government of tearing up "every provision of Magna Carta and Habeas Corpus"—on the ground that 40,000 persons, belonging to the Nazi organisations, are being held in concentration camps. This did not strike many members as a large proportion out of 22 million in the British zone. Nor did it strike them as an unnecessary precaution, with the words of Attorney-General Shawcross at the Nuremberg trial still sounding in their ears. Mr. Noel-Baker, replying for the Government, was not sympathetic to those who wanted to repatriate potentially dangerous Nazi prisoners-of-war now in this country, but he was so much interrupted that the Deputy-Speaker had to intervene. When, however, he announced a new Government policy—that of working the British zone in combination with the American zone and giving an open invitation to the French and the Russians to join in—the House listened attentively and in silence. Mr. Hynd, the Minister in charge of the British zone, made a spirited defence of the administration and after many interruptions brought the debate to the safe harbour of 9.30 P.M., when it concluded on a note of reasoned optimism.

On Wednesday and Thursday we discussed Palestine, with the explosion at the King David Hotel much in our minds. Mr. Morrison presented the Government's proposals for its division, with a Jewish and an Arab province, a central Jerusalem district, and an extra desert province of the Negeb. Mr. Stanley, for the Opposition, accepted these proposals as a second best to outright partition. And possibly it is the way to partition. But in the present circumstances of desperate underground warfare the difficulties of any solution are very great.

On Wednesday the Palestine debate was adjourned at 10 P.M., and the House went on to consider prayers against regulations for food-rationing, which went on until nearly 4.30 A.M. and would have gone on longer

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had the Opposition managed to keep enough members on the premises. (If members demand a count, and there are found to be less than 40 present, the House stands adjourned.) But next day Palestine started all over again, and Mr. Churchill intervened as a supporter of a Jewish National Home in Palestine, which is not the same thing as regarding Palestine itself as a Jewish National Home. If, said Mr. Churchill, we feel that we are "unable to carry out properly and honestly the Zionist policy . . . it is our duty to offer to lay down the mandate"; and it was widely agreed that if the Americans will not coöperate in this plan of a provincially divided Palestine we shall have no option but to do so. Mr. Churchill proposed that "if the United States will not come and share the burden . . ." we should now give notice to UNO that we will return the mandate and evacuate Palestine within a specified period. But in doing this we must also inform Egypt that we will "by all means maintain our position in the Canal zone." Passionate protest, Imperial strategy, historical reminiscence—in such a way the debate went on. But at the end Mr. George Hall, the Colonial Secretary, was given a quiet hearing for very vigorous sentiments very gently expressed, and the debate faded out. No vote was taken and the matter stands referred for the decision of President Truman as to whether the United States will accept joint responsibility. On the last day of the session Mr. Noel-Baker announced that the United Nations discussions on the control of atomic energy had reached second-reading stage, and that the Government accepted in principle both the U.S.A. and the U.S.S.R. proposals, which they thought could be amalgamated.

MEDICUS, M.P.

QUESTION TIME

University Grants Committee

In a written answer Mr. H. DALTON, Chancellor of the Exchequer, stated: I am anxious that, in this new phase of rapid expansion and planned development of our universities, the University Grants Committee should play a more positive and influential part than in the past. The committee have, therefore, been given new terms of reference, as follows:

To inquire into the financial needs of university education in Great Britain; to advise the Government as to the application of any grants made by Parliament towards meeting them; to collect, examine and make available information on matters relating to university education at home and abroad; and to assist, in consultation with the universities and other bodies concerned, the preparation and execution of such plans for the development of the universities as may from time to time be required in order to ensure that they are fully adequate to national needs.

Grants for Medical Research

Mr. PETER FREEMAN asked the Chancellor the amount of grant made for the purpose of medical research for the last 10 years; for what special objects it could be used; and how it had been spent during the last year, with any detailed classifications available.—Mr. DALTON replied: Grants to the Medical Research Council have been as follows:

	£		£
1937–38	195,000	1942–43	195,000
1938–39	195,000	1943–44	215,000
1939–40	265,000*	1944–45	250,000
1940–41	195,000	1945–46	295,000
1941–42	195,000	1946–47	480,000†

* Including £70,000 capital building grant.
† Including £100,000 capital building grant.

Medical research is also assisted by the Exchequer grants made to universities and teaching hospitals, though it is not possible to say what proportion of these grants is spent for this purpose. The annual grant to the Medical Research Council is available for medical research in all its branches. The grant for the year 1945–46 was allocated by the council as follows:

	£
Administration and general purposes	29,260
National Institute for Medical Research	101,167
Research Units and External Staff	105,864
Temporary Research Grants	58,709
	295,000

Supplies of Penicillin

Mr. JOHN LEWIS asked the Minister of Supply (1) if he would state the price at which penicillin was supplied by the manufacturers; and if any price agreement existed between them; and (2) which firms were engaged on the manufacture of penicillin in this country; and what was the output of each concern during the months of May and June.—Mr. WILLIAM LEONARD replied: Glaxo Laboratories Ltd., operating commercially, and Distillers Company Ltd., operating a Government factory as agents for the Ministry of Supply, are the main producers of penicillin in this country. Production on a smaller scale is undertaken by Boots Ltd., Imperial Chemical Industries Ltd., and Kemball Bishop & Company. The great bulk of the output of these concerns is purchased by the Ministry, and it would be contrary to established practice to disclose details of the contracts. There is no price agreement among the manufacturers.—Mr. LEWIS: What restrictions are there on firms not previously engaged in the production of penicillin, who now wish to do so?—Mr. LEONARD: None other than the normal requirement of compliance with the Therapeutic Substances Act if the penicillin is to be used for injection.

Supplies of Streptomycin

Mr. THOMAS BROOKS asked the Minister of Health, in view of the serious incidence of new cases of tuberculosis and the high death-rate associated with this disease, what steps were being taken to import supplies of the drug streptomycin from the U.S.A.; and what efforts were being made for its manufacture in this country.—Mr. A. BEVAN replied: I am informed that American production of streptomycin is too small to permit export to this country. Arrangements are being made with the Ministry of Supply and the Medical Research Council to set on foot the manufacture in Great Britain of sufficient streptomycin for adequate clinical trials.

Release of Specialists from the Forces

Sir ERNEST GRAHAM-LITTLE asked the Secretary of State for War whether he was aware of the wastage of specialist man-power in the Forces, in particular of orthopædic and surgical specialists; and whether he would consider the early release of graded and recognised specialists in the Forces, who were specialists only by virtue of recognition by the Forces medical directorates and who, on reversion to civil life, would require to secure the higher qualifications in their special branch if they were to continue civil specialist practice.—Mr. J. J. LAWSON replied: I am not aware of any wastage of specialists in the Army. Cases which have been investigated have shown that the officers were essential because of the distances involved. I am not prepared to single out Army-trained specialists for early release, as that would break down the basis of release by age-and-service group priority. Officers desirous of obtaining higher qualifications may apply for assistance on their release under the Government's scheme of postgraduate medical education for ex-Service medical officers, or under the further education and training scheme.

Psychiatric Treatment in Prisons

Dr. BARNETT STROSS asked the Home Secretary how many medically qualified psychiatrists were employed full-time and how many part-time in British prisons.—Mr. C. EDE replied: Of the 28 whole-time medical officers at present in the prison service, 6 hold the diploma of psychological medicine, and all the more senior medical officers in the service have had considerable experience in psychiatry. There are 3 medically qualified part-time psychiatrists. All cases in which there is any reason to think psychiatric treatment might be beneficial, whether a court has or has not suggested such treatment, are investigated, and if it appears likely that such treatment will be advantageous during the prison sentence it is provided.

Priority Rations for the Tuberculous

Mr. BOYD CARPENTER asked the Minister of Food what medical advice he had obtained as to the adequacy of food allocations at present made to sanatoria.—Mr. JOHN STRACHEY replied: I am guided on all medical matters by the food rationing (special diets) advisory committee of the Medical Research Council, and the committee has always kept in close touch with the Tuberculosis Association and the National Association for the Prevention of Tuberculosis on all matters pertaining to this disease. The special diets committee is satisfied with the provisions which are being made for sanatoria under present circumstances, and these provisions are approved by the associations I have mentioned.

Major NIALL MACPHERSON asked the Minister whether he would arrange for a priority ration of eggs to be made regularly to persons suffering from tuberculosis against a doctor's certificate.—Mr. STRACHEY replied: It is with much reluctance

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that I cannot, at present, adopt the suggestion. The special diets advisory committee have given careful consideration to the special needs of these patients and the extra foods, 14 pints of milk and 1 oz. of cooking fats a week, which have been allowed are in accordance with their recommendations.

Diphtheria Immunisation

Mr. PETER FREEMAN asked the Minister of Health whether he would see that in all future advertisements recommending the practice of immunisation a statement was added stating that 19,040 children contracted diphtheria after submitting to this operation and of these 142 died, in the last five years, in order that the public might have the full facts concerning immunisation.—Mr. BEVAN replied: No, nor can I agree that this would be giving the public the full facts. Obviously you cannot guarantee absolute immunity in every case; but the most striking facts are that the chance of a child's death from diphtheria is 26 times greater if it is not immunised and that deaths from diphtheria have been reduced to about a quarter of the pre-war yearly average.

Leaflets Attacking National Health Bill

Mr. P. C. GORDON-WALKER asked the Attorney-General what steps he was taking to discover and prosecute the authors of the leaflets attacking the National Health Bill, copies of which had been sent to him, as they lack the imprint of publisher or printer.—Sir HARTLEY SHAWCROSS replied: Inquiries are still being made as to the authors, publishers, and printers of these pamphlets. I would point out that those who publish or disperse propaganda pamphlets of this kind which do not contain the printer's name and address commit an offence under the Newspapers, Printers and Reading Rooms Repeal Act, 1869.

Vivisection Inspectors

Mr. C. CHALLEN asked the Home Secretary for what reason he had decided that a medical qualification was more necessary than a veterinary one for his inspectors operating under the Cruelty to Animals Acts, in view of the fact that the welfare and condition of the animals involved were just as much a part of their responsibility as the requirements of medical research.—Mr. EDE replied: I have two main duties under the Act. One is to see that places where experiments are performed are properly inspected, and medical men are well able to do this. The other is to decide whether authority should be given for proposed experiments and, as the vast majority of the experiments are for the purpose of alleviating human suffering, an inspector without medical qualifications would rarely be in a position to give me the advice I require in this connexion.

Infant Mortality in British Zone

Replying to a question, Mr. JOHN HYND stated that, over the first four months of this year, the infant mortality-rate for the British zone of Germany and the British sector of Berlin was 111 per 1000 live births.

Food Gifts for Hospitals

Mr. W. S. CLUSE asked the Minister of Food whether he was aware that large supplies of gifts from abroad, of food of various kinds, were being distributed to hospitals who were already well supplied through the ordinary channels; and whether he would arrange a distribution to old-age pensioners and other deserving people, after due regard for the welfare of hospital patients.—Mr. J. STRACHEY replied: This is already being done. 70% of all food gifts from abroad is distributed to aged and needy people through local authorities in all parts of the country. The remaining 30% is divided between hospitals, charitable institutions, including homes for children and elderly people, and workers' rehabilitation centres.

Training of Nursing Orderlies

Mr. SOMERVILLE HASTINGS asked the Secretary of State for War if he would arrange that the training of nursing orderlies in the Services was of such a standard as to be accepted by the General Nursing Council so that time spent in such training would count automatically for the diploma of State-registered nurse.—Mr. F. J. BELLENGER replied: The full training in all three Services is such that it is accepted by the General Nursing Council for the purpose of admission to the examination for State registration. During the war the period of initial training of nursing orderlies had necessarily been shortened but the full training course is now being reintroduced in the Royal Navy and the Army, and will be reintroduced in the Royal Air Force as soon as possible.

Obituary

WILLIAM GEMMILL

M.A., M.B. EDIN., CH.M. BIRM., F.R.C.S.

THE death of Mr. William Gemmill, joint professor of surgery in the University of Birmingham, on July 28 after a short illness, coincided with the close of his activities at the university and as honorary surgeon to the United Hospital; indeed it was announced in the press side by side with the appointment of his successor, the new whole-time occupant of the chair.

A Lowland Scot by birth, Gemmill was educated at Edinburgh University, where he graduated M.A. in 1901, taking his M.B. four years later. After graduation he methodically continued his training, taking the English F.R.C.S. in 1913; and the first world war completed his apprenticeship as a surgeon, for at the end he was in charge of a surgical division of a general hospital with the B.E.F. The long preparatory period, between 1905 when he qualified and 1920 when he was appointed assistant surgeon to the Queen's Hospital, Birmingham, was the keynote to his attainments. He had a thorough knowledge of surgery over an unusually wide field, while meticulous care and a broad experience gave him great diagnostic acumen and a sound impartial judgment. He was essentially a general surgeon of the old type; but if the war had not deflected his training he would probably have specialised in neurosurgery, which was always his major interest.

Such men as he form a backbone to surgical training in a medical school and are at their best in the intimate relationship of bedside teaching rather than in the formal procedure of the lecture theatre. He had a great many friends among the practitioners of Birmingham, and he put himself and his skill unreservedly at the disposal of them and their patients. Reserved and shy, he was a difficult man to know; but his patients, with their capacity to penetrate the outward shell, instinctively trusted his strength and kindliness.

With his tenacity, reserve, and general outlook Gemmill was a true Lowlander, and though he had no particular hobby a return to Scotland seemed always to bring him new reserves of strength and refreshment of spirit. But a permanent return to his beloved hills to spend his years of retirement was a dream to remain unfulfilled; and his loss will be greatly felt by his patients and friends throughout the Midlands. S. B.

Medical Diary

AUG. 11 TO 17

Thursday, 15th

EDINBURGH POSTGRADUATE LECTURES

4.30 P.M. (Royal Infirmary.) Dr. J. K. Slater: Trauma as a Cause of Organic and Functional Nervous Disease.

Appointments

ANNAN, W. G., M.D. Edin., F.R.C.S.E.: dermatological specialist medical referee for county-court districts of Barnard Castle, Darlington, Middlesbrough, Northallerton, Richmond, Stockton-on-Tees, Stokesly and Guisborough, Bishop Auckland, Durham and West Hartlepool (circuit no. 2).

University College Hospital, W.C.1:

EBSWORTH, J. D., M.R.C.S., D.A.: asst. anæsthetist, National Dental Hospital.

ROSENHEIM, M. L., M.D. Camb., F.R.C.P.: asst. physician.

WADGE, WINIFRED J., M.B. Lond., F.R.C.S.: asst. surgeon, E.N.T. dept.

Hampstead General and North-West London Hospital:

HARRIS, E. O., M.B. Lond., F.R.C.S.: E.N.T. surgeon.

HOWKINS, JOHN, M.S., M.D. Lond., F.R.C.S., M.R.C.O.G.: gynæcologist to outpatients.

STEEL, G. C., M.R.C.S., D.A.: anæsthetist.

WALTON, HARRY, M.R.C.S., D.A.: anæsthetist.

Hull Royal Infirmary:

BLACKBURNE, J. R., M.B. Lond., F.R.C.S.: asst. surgeon.

BROWN, G. S., M.C., M.B. Edin., F.R.C.S.E., M.R.C.O.G.: gynæcologist.

HALLIWELL, E. O., M.R.C.P.: physician.

MASON, J. I. C., M.B. Lond., F.R.C.S.: asst. surgeon.

MILLER, S. J. H., M.B. Aberd., D.O.M.S.: asst. ophthalmic surgeon.

PATRICK, ANDREW, M.B. Edin., F.R.C.S.E.: surgeon.

STEWART, D. D. S., M.R.C.S., D.O.M.S.: ophthalmic surgeon.

TATHAM, R. C., F.R.C.S.: orthopædic surgeon.

WHITEHEAD, N. T., M.C., M.B. Lond.: pathologist.

Examining Surgeons under the Factories Act, 1937:

CRESSWELL, P. E., B.M. Oxfd: Merthyr Tydfil, Glamorgan.

DAVISON, T. R., M.B. Durh.: Colne, Lancs.

GROVES, J. N., D.S.O., M.B. Camb.: Ledbury, Hereford.

SHEPHERD, HYMAN, M.R.C.S.: Newport, Monmouth.

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Notes and News

THE BUREAU OF CURRENT AFFAIRS

SINCE 1941 the Army has had a bureau of current affairs which has arranged and encouraged group discussions among Service men and women by means of bulletins, "pictorial aids," information services, and short training courses for discussion-group leaders. A civilian organisation of similar type, sponsored by the Carnegie United Kingdom Trust, has now been set up, with the aim of providing the same sort of services for existing discussion groups and for new groups established by educational and social bodies, including clubs, community centres, factories, schools, and "neighbourhood societies." It will issue fortnightly a discussion-brief in pamphlet form for the use of the group leader, giving reliable and well-documented agenda on selected themes, such as housing, schools, population, full employment, and the National Health Service. The pamphlet, besides a popular exposition of the subject by an accepted authority, will contain a layout for discussion, and illustrations—line-drawings which the leader can reproduce on the blackboard, and pictorial devices to express difficult points. A map review, also published once a fortnight, in poster size, carries on one side maps, pictures, and diagrams relating to current affairs, and on the reverse side illustrations of major political, social, and economic problems of our time. For example, the map review for June 13–26 sets out, with the aid of photographs and figures, the main facts about milk-production and distribution, and a little—not quite enough—about the improvement of milk. The address of the bureau is Carnegie House, 117 Piccadilly, London, W.1.

AUTOXIDATION OF ETHER

Dr. Gunnar Lindgren [1] has made a careful experimental study of the chemical, biological, and clinical aspects of this difficult subject, on which much has previously been written. He begins by describing methods for detecting and estimating the products of autoxidation—chiefly peroxides and acetaldehyde. Then follows an account of analyses of various commercial brands of ether sold for medical use, and of the stabilising effect of adding inhibitors like diphenylamine to such samples. In tests carried out with pure ether, autoxidised ether, and ether stabilised with diphenylamine, no difference was observed clinically between any of the samples.

INCIDENCE OF SYPHILIS

LAST year 10,706 new cases of syphilis were treated at clinics in England and Wales; this is the highest total for at least fourteen years, being 1388 more than in 1944, and more than double the 1939 total of 4986. The Ministry of Health, reporting these figures, states that the campaign of public education on venereal diseases is to be continued.

PSYCHIATRY AT SEA

IN *Fear No More*, which the Company of Four are presenting at the Lyric Theatre, Hammersmith, Mr. Arcularis, the patient, has a bad time. We meet him first on the operating-table, receiving an anæsthetic before a serious operation, during which the watching medical students are assured they will see his heart beating in the surgeon's hand. Though the audience do not share this privilege, for the curtain falls before the operation begins, they do have a fairly complete view of Mr. Arcularis's inner recesses during his stormy convalescence aboard the good ship *Kafka*. On this pleasure cruise his fellow passengers bear an uneasy likeness to the matron, nurses, and doctors of the hospital; there is a coffin in the hold which he visits nightly while sleep-walking, and he has a trying interview with his late wife who committed suicide some years earlier. No, he did not actually kill her, but he had the will to kill; and this apparently saps the will to live, for we return to the operating-theatre to see him die on the table. The play is based on a short story by Conrad Aiken. Surgeons should see it for the sake of the psychiatry, and psychiatrists for the sake of the surgery.

FAMILY PLANNING CLINICS

A LIST of voluntary and municipal clinics giving advice on contraception, and in many cases on subfertility, is published by the Family Planning Association, 69 Eccleston Square, London, S.W.1. At 52 of the 60 voluntary clinics in Great Britain and Northern Ireland every patient is seen by a doctor. In England, Wales, and Scotland there are 63 municipal clinics giving advice on birth-control to women who need it on medical grounds. Several of the municipal and voluntary clinics have more than one centre. At three of the voluntary clinics, owing to pressure of numbers, no patients are seen whose incomes exceed £6 a week.

THE FAMILY ALLOWANCE

FAMILY allowances, at the rate of 5*s*. a week (subject to income-tax) for the second and subsequent children of each family, were paid for the first time in this country on Tuesday last.

In the course of a leading article on that date the *Times* says: "If it wishes to encourage parenthood . . . the community cannot rest content even with the equalitarian aim of abolishing absolute poverty in childhood. There remains the more intractable difficulty of differential poverty—the gap in the opportunities and living standards between the small or childless family and the large family at each level of income. . . . This differential poverty, which is felt with special severity by professional workers with relatively high cultural standards, can certainly not be removed by weekly allowances of 5*s*., themselves subject to tax. In the life of all such social groups with high ambitions, income taxation in its present form, even combined with all the new children's benefits and services, is not likely to halt that progressive squeezing out of children which has been proceeding for more than a generation. One reform which needs to be considered is the use of the income-tax and family allowance system not merely as a means of levelling up or levelling down all families nearer to a happy mean, but also, at each income level, as a means of securing that the family with several children is not substantially worse off, when account is taken of its size, than the family with fewer children or none. Alternatively, much might be done by the promotion of occupational schemes, supplementary to the State scheme."

University of Oxford

The following degrees were conferred on July 27:

D.M.—C. W. Hope-Gill, R. C. Browne.
M.Ch.—S. F. Taylor.
B.M.—G. N. Chandler, D. H. Brooks, J. N. Cozens-Hardy, R. H. Hardy, P. L. Pickering, J. M. K. Spalding, J. L. Hadley, P. S. Brown, Brian McConkey, H. L. Backhouse, G. A. K. Missen, Margaret Lingard, Jean C. Ritchie; and H. J. F. Cairns, P. M. de C. Williams, L. T. Cotton, A. G. Hayter, P. R. Clay, Gert L. Loewi, Diana Geekie, Marianne E. Rooth (all in absence).

University of Leeds

As announced last week, Dr. W. S. M. Craig has been appointed to the full-time chair of pædiatrics and child health.

Dr. Craig graduated M.B. at Edinburgh in 1930, when he won the Buchanan scholarship. In Edinburgh he held appointments as clinical assistant, assistant pathologist, and house-physician at the Royal Hospital for Sick Children, as assistant pædiatrician at the Royal Maternity and Simpson Memorial Hospital, and as lecturer in the department of child health. In 1932 he became M.R.C.P.E., and was awarded the John Thompson memorial medal in diseases of children; the following year he graduated M.D., with commendation, and in 1936 he was elected F.R.C.P.E. He is also a fellow of the Royal Society of Edinburgh, and a member of the British Pædiatric Association. Since 1936 he has held appointments with the Ministry of Health; in 1941 was seconded to the Emergency Medical Service as regional hospital officer and later medical officer in charge of the south-eastern region. He has written extensively on pædiatric problems, and has recently produced a textbook, *Child and Adolescent Life in Health and Disease: a Study in Social Pædiatrics*.

University of Edinburgh

Mr. R. J. Kellar has been appointed to succeed Prof. R. W. Johnstone as professor of midwifery and diseases of women from Sept. 1.

Thirty-seven years of age, he was educated at George Watson's College and the University of Edinburgh, where he graduated M.B. in 1931, being awarded the Buchanan prize in midwifery and gynæcology, the Annandale gold medal in clinical surgery, the Wightman prize in clinical medicine, and the Murchison scholarship in medicine. After graduating he was awarded a Freeland Barbour fellowship in obstetrics, a Leckie-Mactier fellowship in medical research, the Simpson prize in obstetrics, and the Lister prize in surgery. He was in general practice for some months, and later held appointments at the Royal Infirmary, the Royal Maternity Hospital, and the Deaconess Hospital, Edinburgh. In 1934 he became M.R.C.P.E., and in the following year F.R.C.S.E. In 1935 he was appointed assistant to the obstetric unit at University College Hospital, London, but in 1937 he resigned from this post and from a Beit fellowship to become reader in obstetrics and gynæcology at the British Postgraduate Medical School. In 1939, as a Territorial, he was mobilised as a regimental medical officer. He served as surgeon to a C.C.S. in the Western Desert from 1940 to 1942, and for the next three years was officer-in-charge of surgical divisions in the Western Desert and north-west Europe. In 1942–43 he was adviser in gynæcology to the Middle East Forces. He was demobilised last year, and was appointed M.B.E. He was elected F.R.C.O.G. in 1945, and F.R.C.P.E. this year. His recent published work has been mainly concerned with problems of recurrent toxæmia, and hypertension, in pregnancy.

1. Autoxidation of Diethyl Ether and its Inhibition by Diphenyl-Amine. Stockholm: *Acta Chirurgica Scandinavica*. Pp. 190.

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University of London

As announced last week, Dr. N. Hamilton Fairley, F.R.S., has been appointed to the Wellcome chair of tropical medicine tenable at the London School of Hygiene and Tropical Medicine.

Dr. Hamilton Fairley qualified M.B., with first-class honours, at Melbourne in 1915. From 1916 to 1919 he was pathologist and later senior physician to the 14th Australian General Hospital in Egypt, where he was appointed O.B.E. in 1918. In 1920 he became assistant director of the Hall Research Institute, Melbourne Hospital, and from 1922 to 1926 he was Tata professor of tropical medicine, Bombay. In 1927 he took the D.SC. at Melbourne, and the following year he was elected F.R.C.P. From 1927 to 1929 he held a special appointment as Commonwealth research officer at the Hall Research Institute, and he was subsequently appointed assistant physician and director of pathology to the Hospital for Tropical Diseases, London. In 1931 he was awarded the Chalmers memorial medal for research in tropical medicine. Before the outbreak of war he was physician and director of special research to the Hospital for Tropical Diseases, London, and lecturer in tropical medicine at the London School of Hygiene and Tropical Medicine and the Westminster Hospital.

In 1940 he went to the Middle East as consulting physician to the 2nd A.I.F., and in 1940–41 acted as tropical consultant, headquarters, Middle East, to the British Forces, for which services he was appointed C.B.E. In 1942 he was elected F.R.S., and in the same year was appointed director of medicine, Australian Military Forces, with the rank of brigadier. From 1943 to 1946 he was also chairman of the advisory committee on tropical diseases, hygiene, and sanitation to General MacArthur at headquarters, South-west Pacific Area, and director, Land Headquarters medical research unit, Cairns, where researches of far-reaching military importance on the chemotherapeutic control of malaria by mepacrine, paludrine, and other antimalarial drugs were carried out on experimentally infected volunteers.

Dr. Hamilton Fairley is author of the section on tropical medicine in Price's *Textbook of Medicine*. His publications include original studies in the dentition and biting mechanism of colubrid snakes; new serological tests in helminthiasis, including the introduction of cercarial antigens in the diagnosis of mammalian schistosomiasis and scolex antigen in the diagnosis of hydatid disease; and the discovery and synthesis of the blood pigment, methæmalbumin, found in conditions like blackwater fever associated with intravascular hæmolysis and hæmoglobinuria.

University of Birmingham

As announced last week, Dr. J. M. Smellie has been appointed to the full-time chair of pædiatrics in the university.

Dr. Smellie qualified M.B. at Edinburgh in 1916. After holding an appointment as house-physician at Edinburgh Royal Infirmary, he joined the Royal Army Medical Corps, and served in Macedonia. On demobilisation, in 1920, he graduated M.D., and held posts as resident medical officer to the General Hospital, Birmingham, and assistant casualty officer to the Hospital for Sick Children, Great Ormond Street, London. He returned to Birmingham in 1922 when he was appointed physician to outpatients and pathologist to the Children's Hospital, and medical registrar and pathologist to the Queen's Hospital. In the same year he obtained the M.R.C.P. He was appointed assistant physician to the General Hospital in 1924, and consulting physician to the Royal Cripples Hospital in 1930. In 1932 he was elected F.R.C.P. He is an original member of the British Pædiatric Association and was on the executive committee from 1938 to 1940. Dr. Smellie served throughout the whole of the late war as an officer in the Territorial Army, and during the last twelve months was consulting physician, Eastern Command, India. He was appointed O.B.E. in 1944.

Dr. W. Melville Arnott who has been appointed to the full-time chair of medicine is 37 years of age.

He was educated at George Watson's College and the University of Edinburgh, where he gained the Grierson bursary in pathology and the Vans Dunlop scholarship in surgery and pathology, and qualified with honours in 1931. After various house-appointments, he devoted himself to clinical medicine combined with work in the university department of pathology, mainly on renal disease, with particular reference to experimental renal hypertension and experimental glomerulo-nephritis. In 1933 he became M.R.C.P.E., and the following year he graduated B.SC., with first-class honours in pathology. He held posts as clinical tutor in the Royal Infirmary, assistant physician in the Edinburgh municipal hospitals, lecturer in clinical medicine, and, from 1936, lecturer in therapeutics under Prof. D. M. Dunlop. In 1937 he was elected F.R.C.P.E., graduated M.D. with gold medal, and was awarded the Gunning prize in pathology. As a Territorial officer, he was mobilised on the outbreak of war, and spent five of six years' service overseas, as a medical specialist and officer-in-charge of medical divisions, with the rank of lieut.-colonel. He served in North China, Malaya, Ceylon, North Africa (including the siege of Tobruk), Palestine, and North-west Europe; he was awarded the Territorial Decoration and was mentioned in despatches. Since he was demobilised last year, he has been acting director of postgraduate medical studies in Edinburgh. In April he was elected assistant physician to Edinburgh Royal Infirmary

Mr. F. A. R. Stammers has been appointed to the full-time chair of surgery.

In the war of 1914–18 Mr. Stammers served for two years as a subaltern in the Royal Artillery. He graduated B.SC. at Birmingham in 1920, and M.B. three years later. After working as house-surgeon and resident surgical officer at Birmingham United Hospitals, resident medical officer at the Birmingham Children's Hospital, and demonstrator in anatomy in the university, he took the F.R.C.S. examination in 1925, and with a Rockefeller fellowship went to the United States, where he studied in the Mayo Clinic. In 1936 he was awarded the mastership of surgery (official). In the late war he served, for the first three years as officer-in-charge of surgical divisions in England and in West Africa, and for the second three years as consulting surgeon, with the rank of brigadier, to Western Command, and later to the Allied Armies in Italy; he was appointed O.B.E. and mentioned in despatches. He is consulting surgeon to the Eye Hospital, Birmingham, and honorary surgeon to the United Hospitals and the Children's Hospital, and is at present assistant lecturer in clinical surgery at the university. Among his recent publications have been papers on peripheral vascular disorders, lymphogranuloma inguinale, delayed suture, and gas-gangrene.

Royal College of Surgeons of England

A meeting of the council was held on Aug. 1, with Sir Alfred Webb-Johnson, the president, in the chair. Prof. G. Grey Turner was reappointed representative on the council of King's College, Newcastle, for a further period of three years. Prof. D. T. Harris was elected an examiner in physiology, and Dr. Arthur Massey and Dr. William Blood examiners for the diploma in industrial health. Mr. L. Carnac Rivett was invited to attend meetings of the council during the ensuing year as the representative of gynæcology and obstetrics.

Diplomas in public health and of membership were granted to the candidates named in the report of the Royal College of Physicians in our issue of Aug. 3 (with the exception of E. I. Bieber, J. R. Handforth, T. L. T. Lewis, and J. Sutherland who already hold the membership.)

A Research Consultant

Lady Florey has been appointed research consultant at the Central Middlesex County Hospital with an honorarium of £250 a year. She has been carrying out investigations at the hospital for some time past while holding a whole-time appointment with the Medical Research Council.

Operating Gowns

Private practitioners needing gowns for obstetrical work, treatment of venereal diseases, operations, or autopsies may now obtain coupon-equivalent certificates which will enable them to obtain six operating gowns. Practitioners in England and Wales should apply, stating particulars, to the Ministry of Health, Whitehall, London, S.W.1; in Scotland, to the Department of Health for Scotland, St. Andrew's House, Edinburgh; and in Northern Ireland, to the British Medical Association, B.M.A. House, Tavistock Square, London, W.C.1, enclosing a stamped addressed envelope.

Mr. Geoffrey Parker, D.S.O., has been made a chevalier of the Legion of Honour and awarded the croix-de-guerre with palm. Mr. Parker is surgeon to the French Hospital in London.

OUR list of candidates successful in the Conjoint Board's examination for the D.T.M. & H. (June 29, p. 987) should have included the name of Air Commodore E. A. Lumley, M.B., D.P.H. The list as printed comprised only those who entered from the London School of Hygiene and Tropical Medicine.

Births, Marriages, and Deaths

BIRTHS

BAILY.—On July 30, in London, the wife of Surgeon Lieutenant R. A. J. BAILY, R.N.V.R.—a daughter.

BREARLEY.—On July 31, in London, the wife of Dr. B. F. Brearley—a daughter.

COMFORT.—On August 4, in London, the wife of Dr. Alex Comfort—a son.

GRETTON-WATSON.—On July 26, in London, the wife of Dr. B. G. Gretton-Watson—a son.

MACFARLANE.—On July 26, at Witney, the wife of Dr. R. G. Macfarlane—a son.

MORRIS.—On August 1, at Perth, the wife of Mr. E. W. T. Morris, F.R.C.S., Sudan Medical Service—a son.

ROSS.—On July 29, in Edinburgh, the wife of Mr. James Ross, M.B.E., F.R.C.S.E.—a son.

MARRIAGES

AGATE—PREEDY.—On July 26, at Spetisbury, John Norman Agate, M.R.C.P., to Rosemary Hester Preedy.

HOUSTON—CRUICKSHANK.—On August 15, in York, James Caldwell Houston, M.D., M.R.C.P., to Thelma Cromarty Cruickshank, M.B.

RISK—SYMINGTON.—On July 23, at Glasgow, James Muir Symington Risk to Winifred Symington, M.B.

DEATHS

DEAS.—On July 28, at Morden, Surrey, Frank Deas, M.R.C.S., aged 77.

DREVER.—On July 22, at George, S. Africa, formerly of Benoni, James Croy Drever, M.B. Edin.

JAMESON.—On July 30, at West Wickham, Robert William Jameson, M.D. Brux., M.R.C.S., D.P.H., barrister-at-law, aged 74.

MACKIE.—On July 29, George Mackie, lieut.-colonel, D.S.O., O.B.E., M.D. Edin., of Malvern, aged 67.

MILNE.—On August 4, at New Barnet, Ernest Wardlaw Milne, M.B. Glasg., aged 70.

WACE.—On July 22, at Lansdowne, U.P., India, Michael Henry Wace, M.R.C.S., lieut.-colonel I.A.M.C.

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DES MOINES, IOWA

PENICILLIN INHALATION IN PULMONARY DISEASE

J. H. HUMPHREY M.B. Camb.
ASSISTANT PATHOLOGIST

H. JOULES M.D. Lond., F.R.C.P.
MEDICAL DIRECTOR AND PHYSICIAN

CENTRAL MIDDLESEX COUNTY HOSPITAL

With the assistance of MURIEL E. SMITH

THE object of the work described here was to find a suitable route, dose, and time interval for treatment with penicillin of chronic infections of the lungs and bronchi. As the good effect of intramuscular treatment on lobar pneumonia has been in striking contrast to the poor results obtained in chronic conditions, it was decided to explore the possibilities of aerosol inhalations. A rational basis for treatment was first sought by comparing the concentrations of penicillin in sputum following similar doses given by two routes. The results of clinical application of a treatment based on these findings were next studied.

Penicillin in Sputum after Intramuscular Injection.—A technique was devised by which as little as $^1/_{48}$ unit of penicillin per c.cm. of sputum could be reliably estimated. It is described in the appendix, together with the precautions taken in collecting the sputum. Samples were obtained, during acute phases of their disease, from coöperative patients with plentiful sputum in whom the clinical diagnosis was beyond doubt. They were nearly all receiving three-hourly intramuscular injections of 15,000 units, but in three cases a single injection of 100,000 units was given and pooled sputum samples were examined during the next twelve hours. All samples covered periods of at least three hours, and some even twenty-four hours. On two occasions penicillin was detected in the sputum within three hours of the first injection. The results are given in table I.

TABLE I—PENICILLIN IN SPUTUM AFTER INTRAMUSCULAR INJECTION

Disease	Patients	Sputa	Penicillin not detected	Penicillin detected: $^1/_{24}$–$^1/_{12}$ unit per c.cm.	Penicillin detected: $^1/_6$–$^1/_3$ unit per c.cm.
Lobar pneumonia	9	10	2	4	4
Lung abscess ..	3	19	18	1	0
Purulent bronchitis	2	4	4	0	0
Bronchiectasis ..	2	3	2	1	0

The number of samples was not large, but the implications were clear. Whereas significant amounts of penicillin were found in the majority of sputum samples from cases of lobar pneumonia, in lung abscess, chronic bronchitis, and bronchiectasis it was only occasionally detected.

A patient with an acute lobar pneumonia superimposed on chronic bronchitis and emphysema illustrated this point very well. He received three-hourly intramuscular injections of penicillin for a week, and his sputum was assayed for penicillin on different days. During his pneumonia samples contained $^1/_{24}$–$^1/_6$ unit per c.cm.; but, when it cleared and only the chronic bronchitis remained, no penicillin could be detected, though he continued to cough up considerable amounts of sputum.

Penicillin in Sputum after Single Inhalations.—Two types of apparatus for producing a mist were studied, both of which deliver a fine mist containing no droplets coarse enough to be visible to the naked eye.

The first was the 'Collison' inhaler already described by Mutch (1944), which is a robust instrument using compressed gas (usually oxygen) for nebulisation. In agreement with him it was found that most patients could comfortably inhale 5–8 litres a minute, and that the rate of delivery under these conditions was about 1·5 c.cm. of liquid nebulised from a single flask in a quarter of an hour. Patients were instructed to inhale through a mouth-piece and to breathe out through the nose. By reducing the volume of liquid in the flask so that the bulk of it was nebulised in any one experiment, changes in concentration of the residual penicillin solution due to simple evaporation were avoided as far as possible.

The second type of inhaler is typified by the 'Riddopag' or 'Rybar' inhalers, the first of which is illustrated in fig. 1. Such an inhaler can be worked either by a rubber hand-bulb or by compressed air generated by a small electric pump. It is much less robust and more liable to clog than the first type, but for outpatient use the hand inhaler has obvious advantages. The electric pump is more economical and more portable for ward use than are oxygen cylinders, which are heavy and need frequent replenishment. The practice with the hand type was to place 0·5 c.cm. of an aqueous solution of penicillin in the reservoir, and to instruct the patient to place the neck of the apparatus in his mouth and to inhale through his mouth as he squeezed the bulb. This was repeated until all the penicillin had been nebulised—usually 10–15 min.

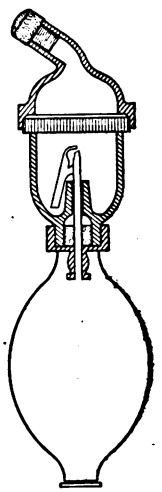

Fig. 1—Riddopag inhaler.

Coöperative patients were chosen, with a wide variety of lung diseases, including all those mentioned above. They mostly produced 50 c.cm. or more sputum a day, though a few produced less. After inhaling an approximately known dose of penicillin either from the Collison inhaler or the hand spray, their sputum was collected into cartons, which were changed each hour and sent immediately to the laboratory. Here they were kept frozen at −10° C until assayed for penicillin content.

The penicillin assay was not nearly so delicate as that used for sputum assay following intramuscular injection, nor was any extraction carried out. Only concentrations of 0·3 unit and over could be detected by this method. It consisted in placing a standard loopful of the well-mixed sputum sample on to a blood-agar plate which had been seeded with the Oxford strain of *Staph. aureus* in the usual way. The plate was examined after incubation at 37° C overnight, and the zones of inhibition were compared with those caused by known amounts of penicillin under similar conditions. No evidence of destruction of penicillin during testing was obtained with a number of control sputa. Fig. 2 shows plates with sputum assays on hourly samples taken from a man with silicosis and purulent bronchitis after being given 60,000 and 20,000 units of penicillin by inhalation. Fig. 3 shows the results of assays of 111 sputum samples set out in the form of a scatter diagram.

It was not always possible to obtain sputum within any given hourly period, but all sputa examined are recorded. Naturally enough the penicillin content was very variable, and serial sputa from one patient would often contain consistently more penicillin than did corresponding samples from another. But the general trend on each dosage is clear, and the amounts of penicillin remain surprisingly high for long periods after inhalation. Although the Collison inhaler gave rather the better results, the hand inhaler was also effective.

Penicillin in Blood and Urine after Single Inhalations.—Though our work was aimed primarily at studying penicillin levels in the sputum, they confirmed incidentally the observations of others that penicillin can be detected in therapeutic concentrations in the blood for 30–60 min. after inhalation of doses of 20,000–60,000 units, and that 10–30% of the dose given can be recovered from the urine.

CLINICAL APPLICATIONS

The aim of treatment was (1) to relieve bronchial spasm whenever it was a prominent symptom and thereby to facilitate penetration of the mist or aerosol; (2) to

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ensure good drainage of sputum, when this was possible; and (3) to maintain an adequate concentration of penicillin in the diseased parts throughout treatment.

Based on the above experimental findings, a routine has been evolved which gives a fair margin of safety in maintaining penicillin concentrations in the sputum and is not unduly wasteful. Before each period of inhalation, patients who can profit by postural drainage are drained for 15 min., and all patients are asked to clear their chests as far as possible. Patients with definite bronchial spasm are given one of the commercial antispasmodic inhalants such as 'Riddobron' or 'Rybarvin,' either for a few minutes before inhalation of penicillin with the Collison apparatus, or mixed with the penicillin with the hand apparatus. (Neither riddobron nor rybarvin destroyed penicillin significantly in the concentrations used when kept in contact for a few hours at room temperature.)

TABLE II—BACTERIA IN SPUTUM

Bacteria	Before treatment	Days after start of treatment					
		1–2	3–4	5–6	7–10	14	21–28
Pneumococci and/or streptococci and/or *Staph. aureus*..	26/26	12(18)*/33	4(7)/26	6(8)/28	3(5)/22	2/9	1/8
H. influenzæ ..	10/26	7/33	7/26	4/28	5/22	3/9	1/8
Coliform bacilli	3/26	13/33	18/26	25/28	20/22	7/9	7/8

Figures give the number of sputa containing specified organisms as a fraction of the number of samples examined for the given period.
Diphtheroid bacilli disappeared rapidly, and so did spirochætes when present. Monilia, *Micrococcus catarrhalis*, and in a few cases fusiform bacilli and bacteroides types persisted.
* Figures in parentheses give the number of sputa in which gram-stained films showed gram-positive cocci to be present. The figures not in parentheses give the number which grew on culture.

The routine differs somewhat for the two types of apparatus.

Collison Machine.—An aqueous solution of penicillin, 10,000 units per c.cm., is placed in one flask, and oxygen is passed through at 5–8 litres a minute. The patient inhales through a mouth-piece for 15 min. at four-hour intervals during the daytime, with a double period last thing at night to ensure bacteriostasis in the sputum until next morning. If the patient is too ill to manage a mouth-piece, a face mask can be used instead, though trial with a normal subject showed that less penicillin was recovered from the urine when the face mask was used than with the mouth-piece.

The dose of penicillin depends on the rate of oxygen flow, which is adjusted to be the most which the patient will tolerate comfortably, but it is usually about 1·5 c.cm. or 15,000 units—i.e., 90,000 units a day. Trials in which patients received only two periods of inhalation a day were followed in a few cases by recrudescence of symptoms, and with this dosage at least four inhalations a day seemed to be necessary. As mentioned above, antispasmodic inhalants are added if required.

Hand Inhaler.—A solution of penicillin, 20,000 units per c.cm., is used. This was originally made up in water, but lately 30% glycerin has been used as a solvent, since it provides a more enduring mist and does not dry up and clog the siphon so readily. (Care is needed in the choice of a batch of glycerin which has a neutral pH and does not inactivate penicillin.) Penicillin solution 0·5 c.cm. is placed in the reservoir, with or without an antispasmodic, and the patient is instructed to inhale the mist through his mouth until all has been nebulised.

The time-table is the same as for the Collison machine, the last dose being doubled as before (total dose 60,000 units daily). The hand inhaler has been used in this way for the treatment of outpatients, and, with a face mask and attached to an electric pump, for inpatients also. Inpatients received 1 c.cm. of penicillin solution at each inhalation period. It was considered advisable in certain cases to continue treatment as outpatients with the hand inhaler for up to two months, though it was expensive of penicillin.

An analysis is presented of 80 cases which have been treated with penicillin in one or other of these ways. Of these, 72 were ill enough to require treatment in hospital initially, and most were severely ill. The majority had already received courses of sulphonamides or of penicillin intramuscularly (three-hourly injections of 15,000 units), with only partial improvement or no improvement at all. The distribution of cases is given in table III. Of these, the first 26 were chosen for careful bacteriological study, and their diseases included 6 cases of bronchiectasis, 4 of lung abscess, 14 with severe exacerbation of chronic bronchitis (of which 8 had asthma), and 2 of purulent bronchiolitis. Treatment lasted 1–10 weeks.

RESULTS

Bacteriological Results.—The effect most easily studied has been on the bacterial content of the sputum. This has been followed by examination of serial films and aerobic cultures of sputa taken at intervals of one or two days from inpatients and weekly from outpatients. The results are presented in table II, which has been greatly compressed and shows only the change in incidence of the commoner organisms as treatment proceeded.

The most notable features are the rapid disappearance of gram-positive cocci, and the appearance of coliform bacilli in nearly all sputa. (The latter may be in part an unmasking effect, whereby scanty bacilli are seen more easily in films and grow more readily in cultures when other organisms are suppressed, but from the examination of films there seemed to be in part a true increase in incidence and numbers.) After four days pneumococci, streptococci, and staphylococci had disappeared from the sputa of all except three patients, and in these there was usually an obvious reason for persistence, such as continued breaking down of a loculated or multiple lung abscess. Staphylococci disappeared within two days in two cases of purulent bronchiolitis which had not improved clinically nor shown any change in bacteriology of the sputum after five and seven days on intramuscular penicillin (120,000 units a day), and in one of which the infecting *Staph. aureus* was six times as resistant to penicillin as was the standard strain.

TABLE III—CLINICAL RESPONSE IN 80 CASES TREATED BY PENICILLIN INHALATIONS

Condition	No. of cases	Much improved	Improved	Not improved
Chronic bronchitis + spasm ± acute exacerbation ..	20	15	5	0
Bronchiectasis	18	12	4	2
Respiratory infection with congestive heart-failure ..	15	7	4	4
Pneumonia and generalised bronchitis	11	7	4	0
Lung abscess	5	3	0	2
Suppurative pneumonitis ..	4	0	0	4
Silicosis + bronchitis	3	2	0	1
Atypical pneumonia ..	4	0	0	4
Total	80	46	17	17

Subsequent studies have in general confirmed these early observations, but have revealed further cases in which sputa containing organisms resistant to penicillin have remained unaffected by the treatment. They include *B. proteus*, *Ps. pyocyanea*, and resistant strains of *H. influenzæ* and *H. para-influenzæ*.

Clinical Results.—Patients said that their cough became easier and less frequent within one or two days of starting treatment. This decrease was their greatest relief. (Such a relief is not symptomatic only, but also removes a major factor in the development of cor pulmonale.) One man, with a long-standing history of bronchiectasis, who had improved remarkably on outpatient treatment volunteered the information that he

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could now climb three flights of stairs comfortably, whereas previously a single flight had caused him distress.

In most cases the *sputum* gradually diminished in amount and became mucoid instead of purulent. Persistence of purulent sputum, notwithstanding diminution in amount, appeared to be associated with the presence of large numbers of *H. influenzæ* in one case, of fusiform bacilli and *H. influenzæ* in another, and of monilia and *H. influenzæ* in a third. The presence of coliform organisms, which never appeared in numbers comparable with those of *H. influenzæ* or of gram-positive cocci in the infected sputa, was not associated with pus or sputum formation to the same degree as were those other bacteria. Nevertheless their rôle in maintaining sputum secretion certainly cannot be discounted. Foul odour disappeared within a few days, though fusiform bacilli could still be found in stained films and the volume of sputum in putrid lung abscesses did not always diminish. Only a third of those patients who responded to treatment were free of sputum on discharge, and the majority, especially those with chronic bronchitis, still produced up to 25 c.cm. of sputum, mainly in the early morning, but were not greatly troubled by it.

Table III shows the results of treatment of different types of case. Our criteria of "much improved" were subsidence of all acute changes and signs of toxæmia, together with very marked or complete reduction of cough and of the amount of sputum, while those for "improved" were subsidence of acute changes and signs of toxæmia, with definite diminution of cough. The sputum in these cases was rendered much more mucoid and less purulent, but was only moderately diminished in amount. In making this assessment we have tried to allow for improvement attributable to the various other forms of therapy which most of the patients had also had, basing ourselves upon previous experience with these diseases in our wards.

Pyrexia in acute bronchitis and bronchiectasis with peribronchitis subsided rapidly and sometimes dramatically, but more slowly in lung abscess and purulent bronchiolitis (taking those cases which responded only).

When *asthma* was associated with acute bronchitis it improved pari passu with the bronchitis, often to a striking extent.

Shortness of breath, which is correlated with greatly diminished vital capacity, was much relieved in those patients with congestive cardiac failure and respiratory infection who responded to treatment. In this group four patients died in hospital with cardiac failure, but the degree of cor pulmonale found at necropsy was so great that death appeared to have been inevitable.

All surviving patients showed much improvement *radiologically*, with subsidence of the acute changes. In certain cases, however, such as those of atypical pneumonia (which were included to provide some sort of controls), the radiological improvement could not be ascribed to penicillin inhalations.

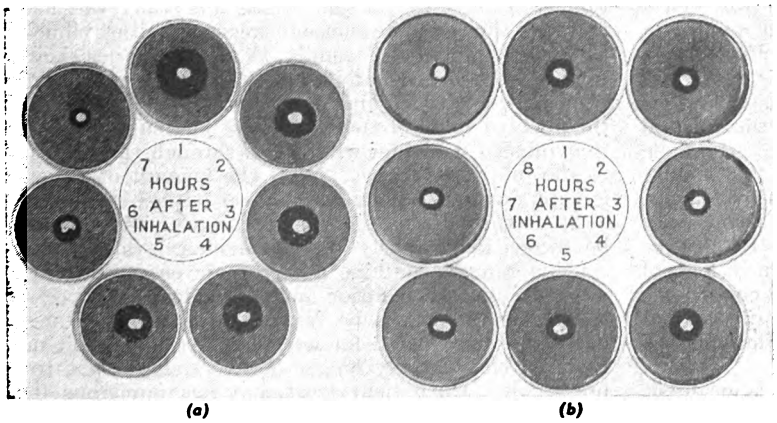

Fig. 2—Blood-agar plates showing zones of inhibition of Oxford *Staph. aureus* by penicillin in sputum from a case of silicosis and purulent bronchitis: *(a)* after inhalation of 60,000 units; *(b)* after inhalation of 20,000 units.

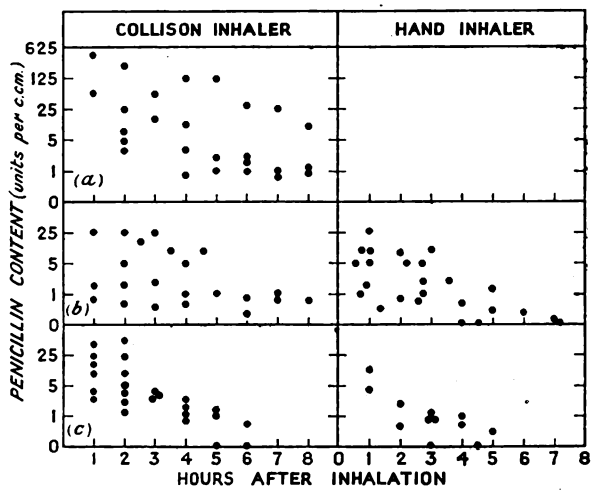

Fig. 3—Penicillin content of 111 samples of sputum after inhalation of penicillin, with two types of inhaler: *(a)* after inhalation of 50,000–100,000 units; *(b)* after inhalation of 15,000–30,000 units; *(c)* after inhalation of 5000–15,000 units.

Serial *white-cell counts* and estimations of *erythrocyte-sedimentation rate* were made in 42 cases. As the clinical condition improved, they also returned towards normal.

Recurrence of acute infections within three weeks of discharge during the period of cold weather followed in two patients, before treatment was continued as outpatients with the hand inhaler. Further work is required to decide how far continued treatment is necessary, but in view of a tendency to early relapse, shown by patients with bronchiectasis particularly, we have continued outpatient treatment in certain cases for periods up to three months.

Three patients died early during treatment. One died from a ruptured aortic aneurysm on the fifth day. At necropsy he had extensive bronchiectasis and purulent bronchitis. The second died from a bleeding duodenal ulcer on the seventh day. He showed only localised bronchiectasis with very little surrounding inflammation at necropsy, but the dilated small bronchi still contained pus from which pneumococci were recovered, though none had been seen in stained films of sputum after the second day of treatment. The third developed a mural thrombus in the left auricle six days after treatment was begun. Inhalation was stopped, and he died three days later from heart-failure. At necropsy, besides advanced silicosis, there was extensive chronic bronchitis, with consolidation of an early bronchopneumonia at the bases. The bronchopneumonia was presumably a terminal phenomenon.

Two other patients in this series died from suppurative bronchiolitis. Their histories and pathological findings are given in detail, since they represent a type of case which would not have been met with but for penicillin therapy, by which they were prevented from early death due to overwhelming infection with gram-positive cocci. We consider that they were similar to a case of suppurative bronchiolitis described by Durant et al. (1946) and successfully treated by them with intrabronchial streptomycin.

CASE 1.—A man, aged 35, had had bronchopneumonia at the age of 12 years, bilateral antral disease at the age of 20, and bronchopneumonia at the age of 30. His present illness had begun four weeks before admission, with

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coryza, cough, dyspnœa, sore throat, and sweating. There had been a gradual increase of purulent sputum. A full course of sulphathiazole had been given at onset of illness, with no apparent benefit.

On admission he was moderately ill, temperature 102·6° F, pulse-rate 120, respirations 32 per min. Fœtor oris was well marked. Purulent sputum 4–6 oz. daily. Physical signs in chest suggested multiple areas of bronchopneumonia and cavitation throughout lower two-thirds of both lungs. Sputum culture grew *Staph. aureus* and *H. influenzæ*.

Intramuscular penicillin, 15,000 units three-hourly, with penicillin inhalation four-hourly, produced a temporary improvement in general condition, with a fall of temperature, and sputum ceased to grow *Staph. aureus*; but *H. influenzæ* became much more numerous. Four days later, despite continued treatment, the patient relapsed, sputum increased, and temperature rose steadily. Radiography suggested multiple small cavities in lower half of both lungs. Death ensued seventy days after the start of illness. Sputum had remained purulent throughout, and in later weeks a pure growth of *H. influenzæ* was recorded on many occasions.

Necropsy confirmed the presence of a generalised acute bronchiectasis, together with an acute purulent tracheobronchitis. Swabs taken from the dilated terminal bronchi grew *H. influenzæ* alone, which were agglutinated by patient's serum taken ten days before death in dilutions up to 1 in 80.

CASE 2.—A man, aged 28, had had a similar clinical and bacteriological course in hospital, following admission for an illness which had lasted for only two days and which at the outset suggested atypical pneumonia, with cold agglutinins present in the serum in dilutions up to 1 in 800. Added infection took place mainly with hæmolytic streptococcus and *H. influenzæ*. The former were cleared from the sputum by penicillin inhalation, but the latter were present in pure culture for the last two weeks of a fatal illness lasting thirty-four days.

Necropsy showed an acute tracheobronchitis and bronchiolitis, together with an acute bronchiectasis. *H. influenzæ*, isolated from the lungs in pure culture after death, were agglutinated by patient's serum taken eight days previously in dilutions up to 1 in 20.

One woman, with a similar history, and with clinical and pathological findings akin to the two cases above, but generally milder, responded to penicillin inhalations and eventually recovered completely. Physical signs suggested an acute bronchiectasis at the height of infection. Subsequent 'Lipiodol' injections showed that there was no residual lesion.

Results of Pre- and Post-operative Treatment.—In 18 cases treated since August, 1945, in which penicillin inhalations were used before and after pneumonectomy or lobectomy for carcinoma of the lung or bronchiectasis, 2 have developed small bronchopleural fistulæ. This figure can be compared with an earlier similar series of 15 cases where penicillin was instilled into the pleural space at operation, and in which 5 cases developed fistulæ. Before penicillin was used, of 22 patients operated on by the same surgeon, 13 subsequently developed fistulæ.

DISCUSSION

Though the concentrations found in sputa provided a definite indication for using penicillin as an aerosol in the chronic infections described, the clinical effectiveness was less readily proved. Treatment by this route has also been indicated by various authors primarily interested in the absorption and excretion of the drug. Mutch and Rewell (1945) and Knott and Clark (1945) have shown that considerable amounts of penicillin appear in the blood and urine of normal persons inhaling a penicillin mist. Detailed papers by Barach et al. (1945), Olsen and Clagett (1945), and Hagen et al. (1945) have discussed the absorption and use of penicillin in aerosol in certain chronic and subacute pulmonary conditions, and Vermilye (1945) has described its use in general practice for the treatment of various infections of the upper respiratory tract.

It might be argued that, when lung disease is localised, as in lung abscess and in bronchiectasis, the affected part has a relatively poor air entry, and the penicillin will be deposited almost entirely in the healthy bronchioles and alveoli. The fact that in normal patients penicillin can be detected in the blood and is excreted in the urine within a few minutes of administration of the mist is strong evidence of rapid absorption from healthy alveoli. Many of the cases studied, however, had localised lesions in the lung (including a case of isolated upper-lobe bronchiectasis), and the sputum presumably came from these rather than from healthy parts, yet it contained detectable amounts of penicillin for as long as eight hours after administration. The most likely explanation is that penicillin mist or aerosol does reach the diseased parts, and that it dissolves in the mucus or pus which lies there, and is only slowly absorbed from these sites. This is an important point in therapy.

It is a considerable criticism of this investigation that no control series was studied, nor could old records be used for the purpose satisfactorily, since the time spent in hospital and the degree of improvement required before discharge have depended considerably on the pressure on available beds, which has been particularly acute during the period of study. In compiling table III, therefore, we have been as critical as we could, and have relied whenever possible on objective rather than subjective criteria of improvement. We feel satisfied that penicillin inhalation as administered has proved its value in two types of case particularly: chronic bronchitis with spasm (with or without acute exacerbation), and congestive cardiac failure brought on or made worse by respiratory infections. Patients with pneumonia whose general lung infection has been improved by systemic chemotherapy but who were left with a relatively intractable bronchitis and peribronchitis were also speeded in recovery. Similarly, patients with pulmonary tuberculosis (not included in the table) whose cough was aggravated by superadded non-tuberculous bronchitis were much relieved of their most troublesome symptom, without any ill effect upon the underlying tuberculosis being apparent. Most patients with bronchiectasis were benefited, but in nearly all the sputum was not abolished. It remains to be seen whether streptomycin given by inhalation would be more successful by eliminating the infection with coliform and other penicillin-resistant organisms. The rapid improvement noted in some patients may be due in part to psychological reasons—for administration of a mist has a straightforward common-sense appeal to them—and in certain cases the frequent postural drainage and deeper respirations during treatment have also played their part. But the most telling argument is the change in quantity, quality, and bacterial content of the sputum.

Certain considerations have always to be remembered. First, there are patients with bronchiectasis, &c., whose infecting organisms are insensitive to penicillin even at the high concentrations obtainable locally by inhalation. We have met 8 such, since this study was made, and they showed no response to treatment either clinically or bacteriologically. Secondly, as the necropsies showed, in the early days at any rate, the sputum may be free from pyogenic cocci, and yet these cocci can be found in the infected small bronchi. It is not justifiable to assume that inhaled penicillin will diffuse through the secretions to the infected surfaces, unless the amount of secretion is kept down by adequate removal (either by coughing or by postural drainage). Neither can penicillin inhalation be discontinued solely on the evidence that a single sputum sample contains no pyogenic cocci, but rather must the clinical condition and the evidence of successive sputum examinations be taken into account. None of our cases was treated for less than five days, and most required considerably longer if early relapse was to be prevented. Outpatient treatment has numerous technical snags, but the work described here demonstrates that treatment can be begun or continued in this way, with the result that patients have been able to leave

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hospital sooner than they otherwise would have done, and have been able to return to work instead of lying up at home.

It is difficult to say yet whether any permanent improvement is likely to be effected by continued or repeated treatment of long-standing cases of chronic bronchitis with emphysema or of bronchiectasis. The persistence of mucoid sputum is bound up with the structure of the chronically inflamed bronchi and bronchioles. They are usually lined with a complete epithelium, and the walls contain numerous mucin-secreting glands. Beneath the epithelium is a layer, more or less thick, of fibrous tissue which is highly vascular and infiltrated chiefly with plasma cells and lymphocytes. It would be very optimistic to suppose that such glands will regress, or that an epithelised cavity will alter much, even though pyogenic infection be permanently staved off and no further fibrosis take place.

In our view treatment with inhaled penicillin alone may speed up a permanent cure in lung abscess, purulent bronchiolitis, &c., which have not become chronic, but in the really chronic conditions it will only arrest acute (and sometimes fatal) exacerbations and prevent the steady deterioration which each winter season brings. As a preoperative and postoperative treatment for lobectomy, however, or when a patient with a known bronchiectasis or chronic bronchitis has to undergo an abdominal operation, penicillin inhalation has many advantages.

SUMMARY

In chronic pulmonary infections penicillin given in three-hourly intramuscular doses of 15,000 units is not as a rule found in the sputum in significant concentrations. In lobar pneumonia the sputum may contain $^1/_{24}$–$^1/_2$ unit per c.cm.

Penicillin administered as a fine mist or aerosol can be detected in the sputum for six hours or more after inhalation of a single dose of 15,000 units. The exact time varies with the dose inhaled.

Methods of administration to inpatients and to outpatients are described which have been used in subacute and chronic pulmonary infections.

As a result, gram-positive cocci are rapidly eliminated from the sputum in most cases, and coliform bacilli appear in nearly all. The sputum diminishes in amount and becomes mucoid, and clinical improvement is the rule.

When the sputum initially contained penicillin-insensitive pathogenic organisms, neither alteration in character nor clinical improvement was noted.

In an analysis of 80 cases treated in this way it was found that 46 were much improved and 17 moderately improved. Whereas recovery from acute and subacute conditions which responded to treatment was usually complete, the more chronic cases were relieved but not permanently cured. Preoperative and postoperative treatment of patients with chronic pulmonary infection submitted to operation was associated with a very low complication-rate.

APPENDIX

Estimation of Penicillin in Sputum.—Small concentrations of penicillin can at present only be estimated by test-tube or slide-cell methods. Sputum for this purpose has the disadvantages that it is both heavily contaminated with bacteria and difficult to dilute owing to its great viscosity. By extracting the penicillin quantitatively into sterile aqueous solution these snags can be overcome. The following method is based on that of Berger (1944) for concentrating penicillin from culture media.

By adding 40% of ammonium sulphate to the sputum at pH 5·5–6·5 the mucin is coagulated (which greatly aids subsequent extraction), and the solubility of penicillin is depressed sufficiently to make it almost quantitatively extractable by amyl acetate at the pH at which it is most stable. The amyl acetate extract is free from bacteria, and from it penicillin can be extracted back with weak alkali, which is rapidly neutralised, and used for slide-cell estimations in the ordinary way. Our procedure is as follows:

Sputum, collected over a known period of time and taken to the laboratory immediately after, is kept frozen at −10° C until tested. All tests have been made within two days of collection. A known volume (1–3 c.cm.) in a graduated centrifuge tube is made up to 3 c.cm. with distilled water, and 1·2 g. of ammonium sulphate is added from a calibrated spoon. If necessary the pH is adjusted to 5·5–6·0, but in our experience the sputum has always been slightly acid and adjustment has not been needed. Without delay 3 c.cm. of amyl acetate is added, and the tube is well shaken. After the amyl acetate has been centrifuged and removed to another centrifuge tube, the extraction is repeated with a further 3 c.cm. of amyl acetate. The combined extracts are shaken with 0·75 c.cm. of freshly prepared 1% sodium bicarbonate solution and centrifuged briefly. The bicarbonate layer is cautiously removed with a Pasteur pipette to a small sterile tube, and to it is added immediately 0·25 c.cm. of *M*/1 acetate buffer at pH 5. The final pH is 7, and the final volume 1 c.cm. Penicillin in the final extract is assayed by serial twofold dilutions in sterile normal serum (beginning at 1 : 2) in slide cells, the Oxford standard strain of *Staph. aureus* being used as test organism.

By using different final volumes of extract any desired degree of concentration can be obtained. Though recovery of penicillin from aqueous solution was virtually complete, from sputum it was often only 70–80%, but this was adequate for our purpose. By the technique described above penicillin added to sputum to give a concentration of $^1/_{48}$ unit per c.cm. could be estimated satisfactorily. Control tuberculous sputa did not contain any bacteriostatic substances extractable by this method.

We are indebted to the doctors and nurses of the hospital for their collaboration; Mr. L. Fatti for the statistics of bronchopleural fistula after operation; Dr. R. D. Teare for his necropsy report on one case; and Lady Florey for advice in preparing the manuscript. The electric pump used was a 'Pneumostat,' kindly lent by Messrs. Riddell Products Ltd., London, W.1.

REFERENCES

Barach, A. L., Silberstein, F. H., Oppenheimer, E. T., Hunter, T. H., Soroka, M. (1945) *Ann. intern. Med.* **22**, 485.
Berger, E. M. (1944) *Nature, Lond.* **154**, 459.
Durant, T. M., Sokalchuk, A. J., Norris, C. M., Brown, C. L. (1946) *J. Amer. med. Ass.* **131**, 194.
Hagen, E. W., Karp, M., Farmer, C. J. (1945) *Arch. Otolaryngol.* **41**, 333.
Knott, F. A., Clark, W. H. (1945) *Lancet*, i, 468.
Mutch, N. (1944) *Ibid*, ii, 775.
— Rewell, R. E. (1945) *Ibid*, i, 650.
Olsen, A. M., Clagett, O. T. (1945) *Proc. Mayo Clin.* **20**, 184.
Vermilye, H. N. (1945) *J. Amer. med. Ass.* **129**, 250.

INHALED PENICILLIN IN BRONCHIAL INFECTIONS

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THE experimental work of Mutch and Hoskins (1944), Mutch and Rewell (1945), and Knott and Clark (1945) in this country, and Barach et al. (1945) in the United States, has shown that it is possible to inhale penicillin safely and obtain a therapeutic level in the blood. Further, Knott and Southwell (1946) have demonstrated in rabbits, by simultaneous estimation, that the blood-penicillin level is relatively much higher in the pulmonary than in the systemic circuit. Apart from the treatment of acute pulmonary infections, it has been suggested (Vermilye 1945) that the topical effect of inhaled penicillin is favourable in chronic bronchial infections.

The present cases have been treated in the asthma clinic at Guy's Hospital since September, 1945.

METHOD

The four nebulisers used were of the Collison and Spiess-Dräger patterns, in both of which the mist is delivered by oxygen pressure and conducted by wide tubing to a B.L.B. mask closely attached to the face—the apparatus devised by Mutch and Hoskins. Calcium penicillin in saline solution was used, in a strength of

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25,000 units to 1 c.cm. Patients received 100,000 units at each session, the inhalations taking about thirty minutes with the oxygen at 8 litres a minute. Owing to the shortage of beds, treatment was given at out-patient visits. For this reason it was not practicable to give the inhalations more than twice or three times a day, a reasonable method, however, in view of the fact that traces of penicillin can be detected in the blood all day with this technique, and penicillin can be recovered from the sputum as long as twelve hours after a single morning inhalation. A treatment course consisted in the administration of 1,000,000 units in ten consecutive twice or thrice daily sessions. In most cases the treatment course was repeated. Patients were instructed to breathe fairly quietly in through the nose and out through the mouth to obtain maximal deposition of penicillin in the bronchial tree and prevent inhalation straight through to the lungs, with consequent rapid absorption, as tends to happen after forced inspiration and deeper breathing.

SIDE-EFFECTS

A complication which may prove serious has been noted. In a high proportion of patients it was possible to eliminate entirely from the sputum the penicillin-sensitive pathogens. Some patients who started treatment with a few colonies of coliform organisms in the sputum finished treatment with very many more colonies of these organisms. In a few patients the most luxuriant growth of coliform organisms was noted. In the following case it seems likely that a bacteræmia was the sequel.

An unmarried woman, aged 33, with some years' history of shortness of breath, was subject to recurrent bronchitic attacks in winter, during which she became more short of breath and wheezy, with a productive cough. Each attack usually lasted two or three weeks and was accompanied by a raised temperature. The attacks usually followed head colds, and she was quite well during the summer. There was a past history of rheumatic fever.

She was seen on May 30, the first day of such an attack. On examination she had aortic incompetence, moderate cardiac enlargement, no signs of decompensation, numerous rhonchi over both lungs, and a productive cough, with tenacious sputum. Pneumococci and *Strep. viridans*, both of which were penicillin-sensitive, predominated in the sputum, and a few colonies of coliform organisms were noted.

Treatment with penicillin aerosol inhalations was started at once, and she received 1,000,000 units in three days. Her symptoms and signs entirely disappeared, and she was very pleased at her rapid recovery. Examination of her sputum revealed a complete absence of the original pathogens; in their place was a profuse growth of coliform organisms. Specimens of sputum were difficult to obtain, but all specimens taken over a week contained these organisms and no others.

As she remained so well, she was advised to continue with the prophylactic use of a morning inhalation of 50,000 units of penicillin. This she did. Eleven days after the onset of her original attack of bronchitis she was suddenly seized with pain in the lower part of the abdomen at 3 A.M. and an intense desire to micturate. Almost unceasing frequency and dysuria continued until 9 A.M., when she was admitted to the ward. During this time she had profuse hæmaturia.

When seen soon after admission she was pyrexial and looked ill. She improved quickly on alkalis and fluids, though frequency and hæmaturia persisted two days. The urine contained organisms morphologically identical with those found in the sputum. She was treated with a sulphonamide course, and the urine became sterile.

MATERIAL

The patients were carefully selected from those attending the asthma outpatients clinic and were all seen by me on their first and each subsequent attendance. Their progress was on every occasion assessed by me. The aerosol inhalations were given in combination with the usual treatment applicable to each case. Most of the patients had been attending the clinic for some years and had been personally known to me for nearly two years; hence their condition was very familiar to me and was comparatively static.

Assessment of improvement in some of these patients was rather difficult, in view of the characteristic fluctuations. Assessment was based particularly on study of the cough and the sputum, especially its quality and quantity, together with relief from breathlessness, freedom from asthmatic attacks, and increase in well-being. Vital capacity was not materially altered by the treatment, and radiographic appearances remained substantially unchanged.

The predominant organisms in the sputum were usually various types of pneumococci or some form of streptococcus, especially *Strep. viridans*, and in nearly every case it was possible to clear these organisms for various lengths of time. In their place, as already stated, bacilli of the coliform type appeared fairly often. These organisms seem to flourish extremely in the absence of the common pathogens. In most patients the pre-existing pathogens returned some weeks or so after the inhalations had been discontinued, but their presence did not always conform with the clinical condition.

The cases totalled 43 and fell into three main groups: bronchiectasis, bronchitis, and asthma.

The cases of *bronchiectasis* were good representative examples of this disease, ranging from a mild cylindrical bronchiectasis, with $1^1/_2$ oz. of sputum, to a gross saccular type in a collapsed bronchopulmonary segment, with 10 oz. of sputum. Bronchograms of the remaining patients revealed fusiform dilatation, and these patients had considerable sputum. Various stages of clubbing of the fingers were present in 5 patients, and 1 also had clubbing of the toes; 4 were toxic. All except the mild case had had postural drainage for periods from three months to five and a half years.

The *bronchitic* patients could be subdivided into two groups: those with symptoms of short duration, and the chronic cases. The former comprised 6 patients, of whom 5 were known to be "bronchial" and had bronchitis, which had followed a recent head cold. Treatment began in 1 case two days after the onset of the bronchitis, in the other 4 cases two and three weeks later. The remaining patient in this group had a severe post-pneumonic bronchitis of four months' duration. All had much cough and some thick tenacious sputum and were wheezy at night.

The second group, or chronic bronchitics, could be further subdivided into suppurative and non-suppurative cases; the latter were typical examples of chronic bronchitis and emphysema. The patients had many years' history, and all had severe symptoms, both in winter and in summer. There were associated bronchospasm and shortness of breath in all these cases, but no attacks of paroxysmal dyspnœa.

The *asthmatic* patients were all established cases, and were chosen, except 4 allergic cases, not only because they were comparatively static and therefore allowing of more reasonable assessment, but also because they were considered to be examples of bronchitic asthma in which the allergic element was minimal, and the underlying condition one of recurrent or chronic bronchial mucosal infection. Thus there was no allergic personal or family history, no eosinophilia, commonly a history of chestiness in the family, and exacerbations of symptoms in winter and after head colds. All treated cases had a penicillin-sensitive predominant organism in the sputum. History in most of these cases extended over many years, and the patients were not free from symptoms at any time during the twenty-four hours. On the whole, their major asthmatic attacks were fairly evenly spaced but were not such a prominent feature of their illness as was the case in the small allergic group.

RESULTS

The results of treatment are given in the accompanying table.

Bronchiectasis.—The bronchiectatic patients made no real improvement. The patients said their cough was easier or the sputum less offensive, but clinical observation

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did not confirm any persistent objective improvement in these patients' condition over any significant period of time, and even their subjective amelioration appeared to be evanescent. The average amount of sputum remained much the same.

Clinical diagnosis	No. of cases	No. of penicillin courses received	Apparent cure—i.e., rendered symptom-free and remaining so	Much symptomatic improvement	Slight improvement	No improvement
Bronchiectasis ..	6	4	0	0	0	6
Residual bronchitis (short duration)	6	1	5	1	0	0
Chronic suppurative bronchitis ..	5	4	0	0	0	5
Chronic non-suppurative bronchitis	5	3	0	3	2	0
Chronic bronchitic asthma ..	17	2–3	1	5	8	3
Allergic asthma ..	4	1	0	0	0	4

Bronchitis.—The patients with bronchitis of short duration did extremely well, their symptoms clearing completely during or immediately after their inhalation course, and they became perfectly fit. It was impossible after treatment to obtain any sputum for re-examination of micro-organisms. Two of these patients were treated as early as November, 1945, and they remained well during the winter, in striking contrast to their health during the past few years, when their winter bronchitis tended to linger on for several months.

The results in cases of long duration appeared to be directly related to the amount of sputum. Thus the chronic suppurative cases did not improve, whereas of the 5 dry bronchitics treated 3 were very much improved and 2 slightly. However, this improvement was short-lived, and in a few weeks these patients were as bad as ever. The predominant organisms had returned in the sputum, and a second, and in some cases a third, course of the penicillin inhalations was then given, which effected the same degree of improvement in each patient, but no prolongation of the improvement was noted. Besides the diminution in severity of cough and in amount of sputum, these patients could breathe much more easily, they felt clearer, and some of them said they were sleeping very much better. One man was able for the first time for years to go into a public-house without being provoked to a violent paroxysm of coughing on entering the smoky atmosphere. Even the suppurative cases appeared to improve in general health to some extent, and an increase in weight was a feature of 4 of the 5 dry bronchitics and 2 of the suppurative cases.

Asthma.—In the asthmatic group, as was expected, the allergic cases did not improve. On the other hand, significant results were obtained in the asthmatics with an underlying bronchial infection. These were all severe and established chronic cases, and improvement was real, though it must be emphasised that, with the one exception, the benefit conferred did not appear to be permanent. Apart from the patient who appeared to be cured, 3 patients were much improved during their first inhalation course, and these 3 patients, who later relapsed and again improved very quickly with a subsequent course, spent the best winter they had experienced for many years and, apart from their solitary minor relapse, were virtually symptom-free. The single case that became entirely symptom-free and remained so was a boy, aged 11 years, who had had asthmatic attacks by night and day for years until his inhalation course. During the first few days of this he began to improve, and at the end of it was symptom-free and has remained so subsequently. He had much cough and some sputum, the predominant organism being *Staph. aureus*; after treatment it was *Neisseria catarrhalis*. This patient received 2,000,000 units of penicillin in thrice-daily consecutive inhalations.

DISCUSSION

The difference in the results of treatment in the three groups of cases was rather what might have been expected. In the bronchiectatics the poor air entry in the region of disease, the gross infection with a multiplicity of organisms, and the extensive lung damage together constitute a most unfavourable combination, and it seems as if inhalations of penicillin by this method are not likely to play any significant part in treatment.

In the bronchitic patients results were much more encouraging, especially in cases of short duration. This is felt to be of real importance in view of the frequency with which recurrent attacks of bronchitis are followed by permanent damage to the bronchial epithelium, with accompanying peribronchial fibrosis, and ultimately a true chronic bronchitis. Any measure which can cut short these damaging attacks, or, better still, abort them, must be of inestimable value in the prevention of chronic bronchitis in susceptible persons. It seems likely that penicillin inhalations may be extremely useful as a prophylactic form of treatment in these patients when they contract an upper respiratory infection. In chronic bronchitis and bronchitic asthma it appears that the more dry the case the greater is the degree of improvement to be expected, and it may well be that inhalation of penicillin will have to be combined with sulphonamide therapy to deal with the penicillin-resistant organisms which otherwise appear to flourish.

Possibly the extremely small size of the particle produced by the vaporisation of the Collison apparatus allows the penicillin to pass too quickly over the affected bronchial mucosa into the alveoli, where it is absorbed. It is tempting to assume that a larger particle of penicillin in an oily solution would remain longer in contact with the affected mucosa and exert a more prolonged effect.

SUMMARY

Penicillin inhalations were given to 43 patients with bronchiectasis, bronchitis, or asthma.

In 6 patients with bronchiectasis so treated there was no improvement.

Of 6 patients with bronchitis of short duration 5 were apparently cured and 1 was much improved.

In 5 patients with chronic suppurative bronchitis there was no improvement.

Of 5 patients with chronic non-suppurative bronchitis all were improved, but none was cured.

Of 17 patients with chronic bronchitic asthma 1 was cured, 13 were improved, and 3 showed no improvement.

In 4 patients with allergic asthma there was no improvement.

In a high proportion of cases it was possible to eliminate penicillin-sensitive organisms from the sputum; but in some cases such an elimination was followed by luxuriant growth of coliform organisms, apparently leading in one case to bacteræmia.

REFERENCES

Barach, A. L., Silberstein, F. H., Oppenheimer, E. T., Hunter, T. H., Soroka, M. (1945) *Ann. intern. Med.* **22**, 485.
Knott, F. A., Clark, W. H. (1945) *Lancet*, i, 468.
— Southwell, N. (1946) *Arch. Dis. Childh.* **21**, 16.
Mutch, N., Hoskins, H. L. (1944) *Lancet*, ii, 775.
— Rewell, R. E. (1945) *Ibid*, i, 650.
Vermilye, H. N. (1945) *J. Amer. med. Ass.* **129**, 250.

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CASEIN HYDROLYSATE

A SUPPLEMENTARY FOOD FOR PREMATURE INFANTS

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INFANTS weighing 2·5 kg. or less at birth generally require special care if they are to develop normally. For practical purposes such infants are considered immature, whether they have been born before, at, or after term. The large majority of them are born before term, and for this reason the expression "premature" infant is often used instead of "immature." As a general rule few, if any, infants whose birth-weight is below 1·0 kg. are viable. Only when the weight is 1·2 kg. or more are the prospects for life more hopeful. Even with this weight, however, the mortality is still high.

Premature infants display further characteristics according to the degree of immaturity. Immediately after birth they often appear to be comparatively robust; but after about twenty-four hours they lie—at least the most undeveloped of them—in an almost continuous state of somnolence, without movement and almost without sound. This functional insufficiency is only temporary, and the signs of weakness gradually diminish and finally disappear.

Apart from complications arising from intracranial hæmorrhage and infections, there are three spheres in which the functional weakness can manifest itself: heat regulation, respiration, and nutrition. Heat regulation and respiration no longer present any great difficulties, provided the respiratory condition, such as apnœa, is not due to intracranial hæmorrhage or other such factor. Nutrition, on the other hand, is a more complicated problem and more difficult of solution.

DIFFICULTIES IN FEEDING

It is generally agreed that human milk is superior to all other types of food for premature infants, and babies in this category are not subjected without very good reason to the dangers of artificial feeding. Breast-milk seems, in fact, to be one of the essentials for a low mortality in this group. On the other hand, the incompletely developed infant has as a rule been forced to begin its extra-uterine life much too soon, and in its case, therefore, breast-milk is not so ideal a food as it is for children born at term.

Another difficulty in feeding the premature child, not met with in the full-term infant, is the supply of food in sufficient quantities, especially in the case of smaller infants with a birth-weight of 1·5 kg. or less. To supply the calories required by these infants solely by breast-milk, with its 70-odd calories per decilitre, strains not only the capacity of the stomach but also the whole digestive system, which in nearly all premature infants, during the first weeks of life at least, is weak.

Because of the tendency of these infants to develop acute inanition a regular feeding regimen is started early, not later than twelve hours after birth. To compensate for the loss of liquid through the kidneys, bowels, lungs, and skin, boiled water is given by mouth, or Ringer's solution is injected subcutaneously during the first few days of life. The smallest babies often lack both sucking and swallowing reflexes at first; and when this is so, they must be fed through a catheter—a comfortable and easily executed procedure, especially since vomiting reflexes also are very often absent. Feeding through a catheter is also useful when the infant is too weak to suck a rubber teat, vomits, or becomes cyanotic while feeding.

Only small quantities of human milk can be given during the first days of life. The amounts supplied should at first not exceed the minimal food requirements for life, and overfeeding must be as conscientiously avoided as underfeeding. The amounts must be very gradually increased; the smaller and less developed the infant, the greater the care needed. Caution is especially necessary when vomiting and cyanosis are observed during the meal. Further increases are based on the infant's weight and tolerance of food. The premature babies in this hospital receive on an average 100 calories per kg. daily. When breast-milk is used as the initial food, the weight, after dropping at first, often remains stationary during the first three or even four weeks of life. After this it begins to rise gradually, provided no complications, such as infections, supervene.

IMPORTANCE OF PROTEIN

Various attempts have been made to increase the supply of calories by giving supplementary foods. In most cases the additional nourishment has consisted of small quantities of a concentrated cows-milk mixture, the object being to meet the infant's large requirements of protein and mineral salts. Casein, glucose, and a mixture of both have been tried.

On purely theoretical grounds one can assume that the proteins are of the utmost importance for the nutrition of the premature infant. Not only must metabolised body proteins be replaced, but also proteins are necessary for growth. For the newborn premature infant considerable difficulties can arise when it has been deprived of its food-supply from the placenta, which supplied amino-acids with the blood; now the food contains only unsplit proteins. It is not surprising that premature infants assimilate the proteins badly and do not gain weight in spite of a considerable protein intake, especially as their digestive processes at this early stage are functioning imperfectly. It therefore seems logical to feed the premature infant with a mixture of all the essential amino-acids. Since the amino-acids are easily absorbed from the intestine, an oral intake would be as effective as the intravenous nutrition of adults with amino-acids introduced by Elman and his co-workers.

An experiment of this kind performed by us has proved completely successful. When the human milk given to premature infants was supplemented by a mixture of free amino-acids and polypeptides containing all the amino-acids found in casein, the infants consistently showed an immediate gain in weight. Further, this gain corresponded roughly to the weight of the proteins assumed to be synthesised from the added amino-acids, due regard being paid to the water fixation of the tissue proteins thus formed. The amino-acids seem to have been completely assimilated. It is considered especially desirable that this form of treatment should be tried during the first weeks of life, before the functional capacity of the premature infant has become stabilised. Our results hitherto have been absolutely unambiguous, and in every instance the gain in weight was much greater during the periods when the breast-milk was supplemented by the amino-acid mixture.

We have been unable to find in the literature any references to similar suggestions for the nutrition of premature infants. In fact amino-acids have long been used for quite other purposes in connexion with infant feeding.

Ribadeau-Dumas and Fouet (1924) recommended the use of amino-acids parenterally for the nourishment of

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athreptic infants. Lesné and Richet (1924) used for rectal infusion in three such cases a solution containing 4% glucose or 0·7% sodium chloride and 4% amino-acids. They did not draw any conclusions from these experiments. Shohl et al. (1939) demonstrated that full-term infants and older children could be kept in a positive nitrogen balance through amino-acids. Hill (1941) used a casein hydrolysate with good results in cases with allergic hypersensitivity to milk.

Practically all previous efforts to facilitate the assimilation of the milk in infant nutrition have aimed at eliminating the formation of curds. Thus, Blatt et al. (1940) suggested treatment of the milk with pancreatic enzymes before pasteurisation, whereby the formation of curds was reduced without any detectable hydrolysis of the milk proteins.

CASEIN HYDROLYSATE AND ITS USE

A casein hydrolysate for intravenous nutrition had been prepared by two of us (E. J. and A. W.). The milk casein was purified by iso-electric precipitation and extraction with boiling alcohol, whereby salts, fats, and vitamins were removed. The enzymic hydrolysis was performed at 37° C with acetone-dried pancreas or a glycerol extract of pig pancreas. The completeness of the hydrolysis was followed analytically (van Slyke). The material was then submitted to dialysis by a special technique suggested by one of us (A. W.).[1] The preparation[2] contains 80–85% of free amino-acids. As the yield at manufacture is 80–100% of the original material, the amino-acid content can be said to be the same as in casein. It has no anaphylactogenic properties.

When the preparation was used as a supplementary food for premature infants, glucose was added to increase the calories in the mixture. To meet the possible salt requirements of the infants the Osborne-Mendel salt mixture was at first added to the preparation. Thus, the composition of this 'Aminosol'-glucose mixture was amino-acid mixture 25%, glucose 25%, and salt mixture 1·5%. Later the salt mixture was left out.

The preparation was always mixed with breast-milk, or with breast-milk and boiled water, during the first days of life. The dilution thus obtained was generally 1 in 20, and it was never less than 1 in 10. In most instances the mixture was given through a catheter during the first days or weeks of life, and later by mouth. Feeding by mouth was not as a rule difficult in premature infants, and it was always practicable, especially with children who had been given the mixture from the beginning. With older children, however, difficulty was encountered owing to the taste, but was overcome by giving the hydrolysate as a powder.

The question of the most suitable dosage is still under investigation. When we began our experiments we tried many different doses. When larger doses were given the infants often vomited, in most cases only small regurgitations. In most of the children there were no signs of digestive disturbance. Except during the earliest days a daily dose of 10 ml. of aminosol-glucose (2·5 g. of amino-acids) per kg. of body-weight was given practically in every case without causing any trouble such as vomiting or digestive disturbances. This dosage, however, is perhaps unnecessarily large for some infants, as it produces an excessive increase in weight. Doses half as large have often proved sufficient to give a satisfactory gain.

A point of particular interest was the effect produced by the amino-acid feeds during the earliest weeks of life. It is at this stage that the difficulty of bringing about a satisfactory gain in weight through breast-milk alone is greatest. To eliminate as far as possible the high variability which has always to be taken into account at this stage of life, it was arranged that the same infant should be given alternate feeds of breast-milk alone and of breast-milk to which the amino-acid mixture had been added. In this way we were able to estimate the effect without having too large a series of infants to examine.

Our first experiments were made in November, 1943, and the results in 30 cases were reported by Magnusson (1944a and b). Further cases are described below. In these cases (figs. 1–7) the daily amount of breast-milk given to an infant was the same during the different periods of comparison.

1. A patent application for this procedure was filed by Wretlind in Stockholm on March 29, 1943, and in London on March 15, 1944.
2. Manufactured by Vitrum, Stockholm, and sold under the name of 'Aminosol.'

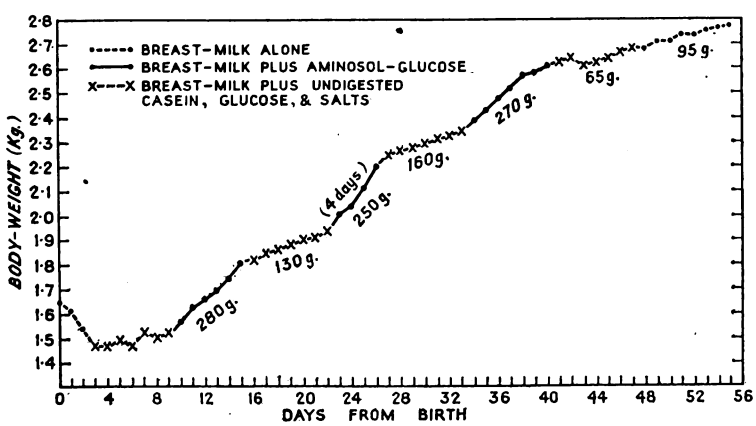

Fig. 1—Weight curve of case 1 (born two months before term) on feeds indicated. Numerals alongside curve show weekly gains in weight. The supplementary foods were given in amounts of 2·5 g. per kg. of body-weight daily.

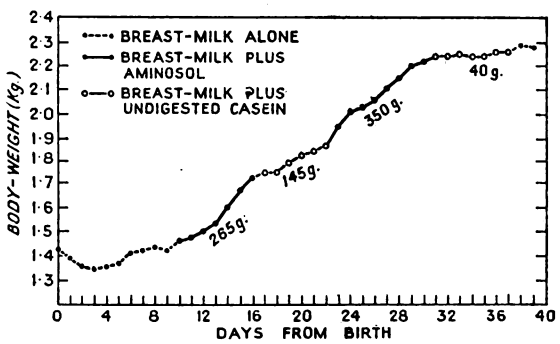

Fig. 2—Weight curve of case 2 (born eight weeks before term) on feeds indicated. Numerals alongside curve indicate weekly gains in weight. The supplementary foods were given in amounts of 2·5 g. per kg. of body-weight daily.

CASE 1.—Male, born two months before term. Weight at birth 1·64 kg., height 43 cm. The mother was a healthy primipara and had had an otherwise uneventful pregnancy and a normal delivery. Immediately after birth the infant was given 1 ml. of vitamin K, and about one hour later was transferred to the children's wards. His colour and tone were good, but his cry was weak and shrill, and his temperature 95·7° F. The subcutaneous fat was not abundant. The internal organs were apparently normal. Prothrombin index 110.

On the fourth day he had mild icterus neonatorum, which rapidly subsided. He was placed in a cradle at once, and for the first three weeks his temperature was slightly irregular, but after that it remained at 98·6° F all day.

From the ninth to the forty-eighth day he was given breast-milk supplemented by aminosol-glucose and by undigested casein, glucose, and salts alternately, usually for a week at a time (see fig. 1). Between the twentieth and the thirty-third days he had a slight cold, but no other signs of infection were noted. During the whole period he was in good health, and there was no cyanosis, œdema, or diarrhœa. On the second day of life the hæmoglobin was 110%, and on the fifty-sixth day 64%. Radiography of the bones of the hand when

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GAIN IN WEIGHT DURING FIRST MONTH OF LIFE IN PREMATURE INFANTS WHOSE WEIGHT AT BIRTH WAS 1·9–2 KG. (TABLE I) AND 1·3–1·4 KG. (TABLE II)

Age	I				II			
	Fed on breast-milk alone		Fed on breast-milk plus aminosol-glucose		Fed on breast-milk alone		Fed on breast-milk plus aminosol-glucose	
	Cases	Av. weight (kg.)	Cases	Av. weight (kg.)	Cases	Av. weight (kg.)	Cases	Av. weight (kg.)
Birth	38	1·961	9	1·962	30	1·368	7	1·354
1 week	37	1·813	9	1·900	29	1·249	7	1·376
2 weeks	38	1·925	8	2·079	28	1·354	7	1·521
3 weeks	36	2·036	6	2·223	23	1·505	6	1·697
1 month ..	25	2·226	6	2·523	21	1·697	6	2·008
Gain in weight during first month of life	..	0·265	..	0·561	..	0·329	..	0·654

he was two months old did not show any signs of rickets.

CASE 2.—Male, born eight weeks before term. Weight at birth 1·44 kg., height 41 cm. The parents were healthy. His mother, aged 28, was a primipara and had had repeated hæmorrhages from the uterus during pregnancy. The delivery was spontaneous, with breech presentation. Immediately after birth the infant was given 1 ml. of vitamin K plus 8 ml. of citrated blood intramuscularly, and he was then transferred to the children's wards.

On examination a few hours later, he was of good colour but flabby, his movements were poor, his cry was weak, and his temperature 92° F. The subcutaneous fat was not abundant, the testes were in the inguinal canal, and the internal organs were apparently normal. Prothrombin index 90. He was placed in an incubator for the first ten days, and after that his temperature remained stable in a cradle with a hot-water bottle.

From the ninth to the thirty-eighth day he was given breast-milk supplemented by aminosol-glucose and by undigested casein alternately for about a week at a time (see fig. 2). Between the tenth and the twenty-seventh days he had a slight cold, without other signs of infection. His general condition remained good, he had no cyanosis, œdema, or diarrhœa. During the first three weeks he was fed through a catheter; after that he sucked a rubber teat and was started at the breast on the thirty-eighth day. At the end of the first week he was given a course of vitamin D_2, 500,000 international units altogether. The hæmoglobin was 136% on the second day of life, and 76% on the thirty-ninth day. He was discharged in good health and was then having six breast-feeds a day.

In all the tests where, as in these two cases, the effect of the amino-acid mixture was compared with that of undigested casein there was a much larger gain in weight while the infant was receiving the amino-acid mixture. The amount of calories supplied in the supplementary food was the same in both cases. The increase in weight during the amino-acid periods can therefore not be set down to the extra supply of calories. The cause is undoubtedly the amino-acids. In other words, the premature infant cannot assimilate, at any rate completely, the undigested casein. Case 2 also goes to show that the decisive factor in the gain in weight is the amino-acids and not the glucose or salts.

It is well known that premature infants have a tendency to œdema, and that the œdema often appears during one of the first days of life. According to Young et al. (1941) the cause is to a large extent the low sodium and chloride clearances. The salt content of the amino-acid mixture should therefore be carefully considered. To determine whether the effect of the preparation was brought about by the amino-acids or by the salts, a comparison was made between aminosol and the ash from the preparation. The results obtained are shown in figs. 3, 4, and 5.

As the premature infant is extremely sensitive, it was considered advisable to use for oral administration an amino-acid mixture as pure as that given intravenously. Figs. 6 and 7 compare the results obtained with aminosol and with another preparation of casein hydrolysate not so pure.

LENGTH OF TREATMENT

The question arises whether amino-acids should be given to all premature infants during the early weeks of life, or whether they should be given only to those showing an unsatisfactory weight increase on breast-milk alone. Another question is how long the amino-acid feeds should be continued. If an infant is fed for a period with amino-acids one week and a corresponding amount of undigested casein the next, the difference in the weight increase in favour of the amino-acid feeds is as a rule very great during the first weeks. Towards the end of the second month of life this difference becomes gradually less and finally disappears. In other words, the addition of amino-acids to the breast-milk is of most value during the first few weeks of life. To ascertain how long the amino-acid feeds should be continued, we are studying a series of infants who are receiving amino-acid mixture added to breast-milk in an unbroken period until they are placed at the breast. As a rule, for technical reasons, the amino-acid treatment must be discontinued when the infant has learnt to suck the breast.

Tables I and II show the results obtained by this continuous treatment in two series of infants belonging to different weight-groups. The number of infants treated so far is too small to allow general conclusions to be drawn, but the greater increase in weight in the infants fed with amino-acids is very evident. Some of the infants reared on breast-milk without added amino-acids received supplements of glucose or of casein, or a mixture of both, during the last half of the month. The amount of breast-milk received by the test and control groups was the same.

TABLE III—GAIN IN WEIGHT DURING FIRST FIVE WEEKS OF LIFE IN TRIPLETS BORN SIX WEEKS BEFORE TERM AND REARED ON DIFFERENT DIETS

Age	Body-weight (kg.)		
	Breast-milk	Breast-milk plus aminosol-glucose	
	Case 3	Case 4	Case 5
Birth	2·030	1·850	1·650
1 week	1·900	1·800	1·620
2 weeks	2·030	2·020	1·980
3 weeks	2·230	2·260	2·130
4 weeks	2·300	2·440	2·320
5 weeks	2·460	2·680	2·500
38 days	2·560	2·820	2·610
Gain in weight during first 38 days of life ..	0·530	0·970	0·960

We have observed the effect of amino-acid feeds during the first weeks of life in a set of triplets (cases 3, 4, and 5). The two smallest infants received breast-milk to which aminosol-glucose had been added, and the largest received breast-milk alone. The gains in weight are shown in table III. The parents were healthy. The mother, aged 29, was a primipara, and her pregnancy had been uneventful, except that the triplets were born six weeks before term. Birth was spontaneous, with the first triplet in vertex presentation, and the second and third in breech presentation. All three infants were in good

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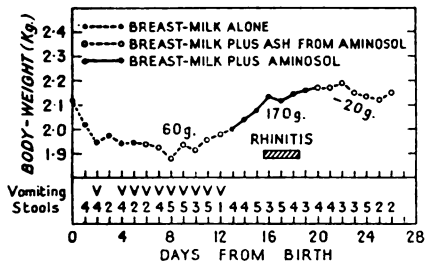
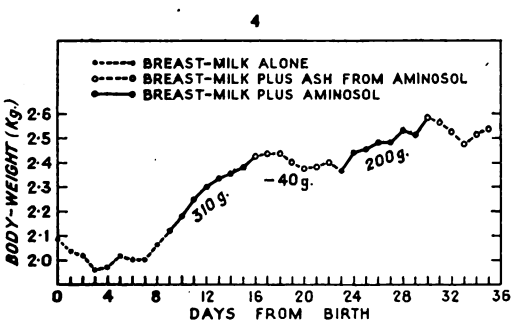
condition at birth. Cases 3 and 4 were almost certainly uniovular. The triplets were admitted to the Norrtull Children's Hospital when they were not quite a day old.

CASE 3.—Male. Birth weight 2·03 kg., height 43 cm. On admission his temperature was 96·8° F, general condition good. He had a good colour and a strong cry. Subcutaneous fat abundant, lanugo abundant, testes descended, and internal organs apparently normal. Blood-picture normal. During the first week a prothrombin determination showed a coagulation-time of 10 min. Injections of vitamin K had no effect, but intramuscular administration of blood had a strong effect, which, however, did not last. The same features were observed in the other two infants. On the fourth day he had mild icterus neonatorum, which disappeared completely by the third week after birth. There was no cyanosis or œdema.

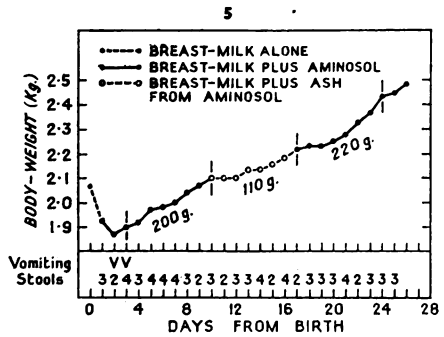


Figs. 3-5—Weight curves of three premature infants on feeds indicated. Numerals alongside curves show weekly gains or losses in weight. (Where a food was given for more than a week at a time, as in fig. 5, vertical lines show the weeks to which the gains in weight refer.) These experiments were performed to determine the relative merits of amino-acids and salts in aminosol. The aminosol was given in amounts of 2·5 g. per kg. of body-weight daily, and the ash was given in amounts derived from 2·5 g. of aminosol per kg. of body-weight daily.

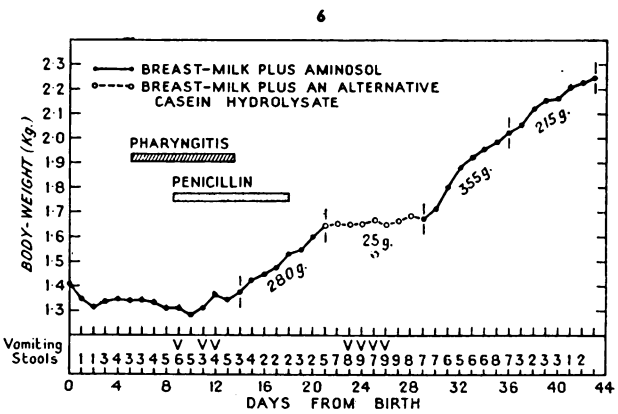
He was fed through a catheter during the first week, sucked a rubber teat strongly from the eighth day onwards, was started at the breast at the age of two weeks, and a week later was taking five breast-feeds a day. Except for the first five days, during which he was given, like his brothers, boiled water by mouth, he received only breast-milk during the whole time he was in the hospital.



He was placed in a cradle from birth, but for the first three weeks a hot-water bottle was necessary. During his stay in hospital he showed no signs of infection and had no diarrhœa. Both he and his brothers received on the third and ninth days of life an intensive course of vitamin D_2, 500,000 international units in all. On the second day the hæmoglobin was 152%, and on the thirty-fourth day 116%. As in the case of his brothers, radiography of the wrist bones (on the thirty-fourth day of life) revealed no signs of rickets.



He was discharged in good health on the thirty-eighth day, weighing 2·56 kg. and measuring 48 cm. At a follow-up examination at the age of 6 months he weighed 6·5 kg. and measured 62·5 cm. There were no signs of rickets, and the hæmoglobin was 92%.



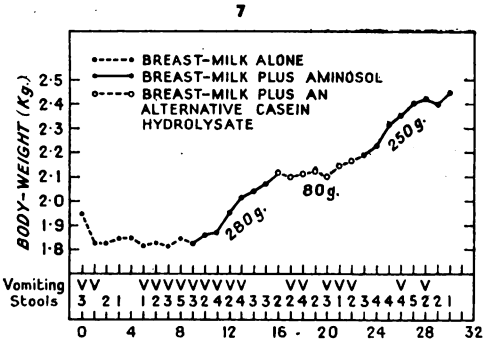
Figs. 6 and 7—Weight curves of two premature infants on feeds indicated. Numerals alongside curves show weekly gains in weight. (Where a food was given for more than a week at a time, as in fig. 6, vertical lines show the weeks to which the gains in weight refer.) These experiments were performed to determine the relative merits of aminosol and another preparation of casein hydrolysate. The supplementary feeds were given in amounts of 2 g. per kg. of body-weight daily.

CASE 4.—Male. Birth weight 1·85 kg., height 42·5 cm. On admission his temperature was 97° F and general condition good. He had a strong cry and a good colour, his movements were good, subcutaneous fat rather meagre, lanugo abundant, testes descended, and internal organs apparently normal. He showed no especially pronounced jaundice. Blood-picture normal. No cyanosis and no œdema.

He was fed through a catheter for the first week, took his food through a rubber teat the second week, was started at the breast in the third week, and from the fourth week onwards was having five breast-feeds a day. This infant, like case 5, was given 10 ml. of aminosol-glucose per kg. of body-weight a day added to the breast-milk.

He was placed at once in a cradle, and from the fourth week onwards his temperature remained level without a hot-water bottle. While in the hospital he showed no signs of infection and had no diarrhœa. The hæmoglobin was 137% on the second day and 89% on the thirty-fourth day.

He was discharged on the thirty-eighth day in good health, weighing 2·82 kg. and measuring 48 cm. At a follow-up examination at the age of 6 months he weighed 6·5 kg. and measured 63·5 cm. No signs of rickets; hæmoglobin 70%.



CASE 5.—Male. Weight at birth 1·65 kg., height 42·5 cm. On admission his temperature was 96° F, his cry weak, his movements poor, subcutaneous fat poorly developed, lanugo abundant, testes descended, and internal organs apparently normal. Blood-picture normal. He had mild icterus neonatorum, which soon disappeared.

During the first day at the hospital it was necessary to administer oxygen because of cyanosis, but there were no further attacks during the first weeks of life. He showed no signs of œdema while in hospital. He was placed at once in a cradle, but it was not until after the middle of the fourth week that he could do without a hot-water bottle.

He was fed through a catheter during the first and the greater part of the second week. After that he sucked a rubber teat until he was a month old, and was then placed at the breast five times a day. For extraneous reasons he could not be placed at the breast earlier.

During the first days of life his temperature was irregular, fluctuating between 96° F and 101·5° F. On the tenth day

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he had an infection of the upper respiratory tract, which persisted in a more or less aggravated state for the rest of his stay in hospital. The sedimentation-rate varied between 16 and 25 mm. in 1 hour. Except for a bad attack of cyanosis on the forty-seventh day of life the patient was, however, in good general condition the whole time; he gained steadily in weight and had no vomiting or diarrhœa.

Because of the infection he was kept at the hospital longer than his brothers and was not discharged until he was fifty-three days old. He was then in good health and had only a slight catarrhal discharge from the nose. He weighed 3·1 kg. and measured 49·5 cm. The hæmoglobin, which was 112% on the second day of life, was now 70%. At a follow-up examination at the age of 6 months he weighed 5·55 kg. and measured 61 cm. No signs of rickets; hæmoglobin 94%.

SUMMARY

Over 100 premature infants have been given a mixture of amino-acids, an enzymic casein hydrolysate, as a supplement to breast-milk. In most instances the daily dose was 2·5 g. of amino-acids per kg. of body-weight, together with an equal amount of glucose.

The infants tolerated the amino-acid mixture well, when it was given according to this regimen. There were no signs of digestive disturbance.

The feeding of this mixture of amino-acids produced in every instance a distinctly higher gain in weight than breast-milk alone.

A comparison between the effects of this amino-acid mixture and of a mixture containing undigested casein, glucose, and salts in the same strengths and proportions proved that the gain in weight was consistently greater during the periods when the infants were receiving amino-acids than when casein was being administered. By special tests, in which neither glucose nor salt mixture was added to the diet, it was demonstrated that the gain in weight was due to the amino-acids.

The results achieved up to now indicate that by administering this supplementary food we can shorten the stay in hospital of these infants.

REFERENCES

Blatt, M. L., Harris, E. H., Jacobs, H. M., Zeldes, M. (1940) *J. Pediat.* **17**, 435.
Hill, L. W. (1941) *J. Amer. med. Ass.* **116**, 2135.
Lesné, E., Richet, C. (1924) *Bull. Soc. Pédiat. Paris*, **22**, 414.
Magnusson, J. H. (1944a) *Nature, Lond.* **154**, 91.
— (1944b) *Svenska Läkartidn.* **41**, 1041.
Ribadeau-Dumas, L., Fouet, A. (1924) *Bull. Soc. Pédiat. Paris*, **22**, 410.
Shohl, A. T., Butler, A. M., Blackfan, K. D., MacLachlan, E. (1939) *J. Pediat.* **15**, 469.
Young, W. F., Hallum, J. L., McCance, R. A. (1941) *Arch. Dis. Childh.* **16**, 243.

ACUTE ABDOMINAL LYMPHADENITIS IN CHILDREN

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EVERY surgeon who operates on acute abdominal conditions in children must meet from time to time cases in which the most striking pathological change is well-marked enlargement of the mesenteric lymph-glands. Experience soon convinces him that the condition is not tuberculous, and since some degree of appendicular inflammation is commonly associated with the adenitis, the appendix is removed, and no particular interest may be taken in the glandular change. We noticed that these cases showed a pronounced tendency to chest complications, and gradually we realised that the picture was so well-defined that it must represent a clinical entity. We have now seen and treated 32 cases of acute abdominal adenitis, and have reached fairly definite conclusions about the diagnosis and treatment. Although we do not think that operation is the right treatment, we have found that there is a slight but definite danger of the supervention of appendicular obstruction, and therefore the only safe place to treat the children is in hospital, where pædiatrician and surgeon are both available and consultation between them is possible.

Acute abdominal adenitis is characterised by the acute onset of abdominal pain and pyrexia, associated with pharyngitis or tonsillitis and with a minor respiratory infection. Provided the child does not have an operation the illness runs a course of 12–14 days, after which full recovery is to be expected. If, on the other hand, the abdomen is opened the lung condition flares up and the child may develop a sharp attack of pneumonia. The average stay in hospital of the children who had appendicectomy performed was 3–4 weeks. Since appendicular disease is the commonest cause of severe abdominal pain in children, it is inevitable that most of these cases of acute abdominal lymphadenitis will be sent to hospital labelled appendicitis, and it is a matter of some concern to decide not to open the abdomen.

ILLUSTRATIVE CASE-RECORD

A boy, aged 9 years, was admitted to hospital with a history of intermittent central abdominal pain for 4 days during which he had vomited five times. He had not had a bowel action for 3 days. For 3 days he had had a red rash on his abdominal wall.

On admission his temperature was 102·2° F, pulse-rate 128, and respiration-rate 24 per min. He was flushed, with well-marked circumoral pallor and a "strawberry" tongue. There was an erythematous rash over the abdomen. His throat was injected and he had a granular pharyngitis. The cervical lymph-glands were enlarged and tender; there was slight enlargement of the axillary and inguinal glands. At the base of the right lung the percussion note was impaired, the air entry was diminished, and there were a few inconstant crepitations and a pleural rub in the midaxillary line. No abnormality was found in the cardiovascular system, apart from the tachycardia. The child was having attacks of abdominal colic when admitted, and the lower half of the abdomen was tender on palpation, the maximum tenderness being over the right iliac fossa (R.I.F.). There was also tenderness in the right renal angle. Slight resistance of the muscles on the right side of the abdomen was present, but there was no abdominal rigidity. Rectal examination was negative. The leucocyte count was 12,000 per c.mm. (polymorphs 46%, monocytes 12%, lymphocytes 35%). A heavy growth of hæmolytic streptococci was obtained from the throat swab. The Paul Bunnell test was negative.

At the end of 24 hours the abdominal colic ceased and the temperature was normal on the second day. On the 4th day the temperature rose to 102° F with an exacerbation of the abdominal pain. Pyrexia and abdominal symptoms subsided finally on the 7th day. The rash faded on the day after admission; the chest signs had cleared by the 3rd day. Treatment was by rest in bed, warmth, light diet, and sulphanilamide insufflations of the throat. The patient was discharged on the 19th day, and when last seen, a year and 3 months later, was quite well and had had no recurrence of abdominal pain.

This case was rather more severe than the average, and showed definite streptococcal manifestations. No other child in the series had a rash.

ANALYSIS OF 32 CASES

The children were all treated in the wards of Oster House Emergency Hospital, St. Albans, and were admitted from a comparatively small area of Hertfordshire. Their ages ranged from $2^1/_2$ years to 11 years; 12 were boys and 20 were girls. In 11 cases laparotomy was performed and the appendix removed.

Of the 32 children, 28 have been seen at intervals varying from 3 to 26 months after their discharge from the wards, and careful inquiry has been made as to their health and their freedom or otherwise from abdominal pain. One case only, a girl of 9 years, has had to be readmitted, 13 months after her first attack.

On June 29, 1943, this girl was admitted with a history of 3 weeks' malaise and tiredness. On the day of admission she

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TABLE SHOWING PYREXIA, PULSE-RATE, AND LEUCOCYTOSIS ON ADMISSION

Case	Temp. °F	Pulse-rate	W.B.C.	PMN (%)	Case	Temp. °F	Pulse-rate	W.B.C.	PMN (%)
1	100·8	136	8900	69	17	100·2	120	9325	69
2	100·6	128	..	..	18	99·0	104	8250	56
3	102·6	100	6700	59	19	102·2	128	12,100	46
4	99·4	110	18,850	49·5	20	99·0	94	12,525	61
5	101·2	124	6900	65	21	99·2	80	6400	58·5
6	99·0	120	20,700	65	22	101·0	128	22,575	84·5
7	102·4	120	38,420	93	23	98·0	92	15,075	66·5
8	99·2	92	5800	50	24	102·4	120	..	..
9	102·0	120	10,800	47	25	100·0	120	..	..
10	102·6	160	..	..	26	100·0	132	10,850	48
11	99·4	112	10,750	..	27	102·8	130	11,625	45
12	101·0	132	5250	48	28	102·4	128	6600	52
13	99·0	120	15,600	74·4	29	98·0	124	..	..
14	100·0	130	..	..	30	98·6	84	..	..
15	102·6	150	7250	50	31	102·8	150	..	..
16	99·8	120	12,400	58	32	102·6	150	13,400	67

had had two attacks of pain around the umbilicus. There was no history of nausea or vomiting, of urinary symptoms, or of bowel irregularity. She was actually having colic when examined, and was found to be tender in the R.I.F., in the L.I.F., and in the right renal angle. The temperature was 99·4° F, pulse-rate 110, and respiration-rate 22 per min. She had circumoral pallor, a strawberry tongue, and infected tonsils. There was no abdominal distension or guarding. Examination of the chest showed diffuse bronchitis, and diminished air entry and pleural friction at the right base. It was decided not to operate. All signs and symptoms disappeared by the 3rd day and she was discharged apparently well on the 12th day.

On June 20, 1944, she was readmitted. In the interval she had had a few attacks of abdominal pain. For 4 days before admission she had been feverish, and for a day she had had acute abdominal pain and diarrhœa. She was also complaining of a sore throat. Examination revealed circumoral pallor and pharyngitis as before, but the lungs were clear. The temperature was 102·4 °F and the pulse-rate 120 per min. There was well-marked tenderness and guarding in the R.I.F., and at operation, which was carried out immediately, gangrene of the terminal two-thirds of the appendix was found. There was also generalised enlargement of the mesenteric and para-aortic glands. Postoperatively the pyrexia subsided by lysis and the temperature was normal by the 5th day. The patient made a good recovery.

This was the only case in the series in which we had reason to regret not having removed the appendix before allowing a child to go home.

The constant features in the 32 cases were abdominal pain, pharyngitis, and pyrexia. Vomiting occurred in about half the cases. Abnormal signs at the base of the right lung were present in 25 cases when first seen. Of the 11 cases treated by operation, 5 developed serious right-sided chest complications—either pneumonia (3 cases) or collapse. The temperature and pulse findings on admission are shown in the table. Pyrexia is on the whole higher than is usual in the early stages of appendicular disease. Leucocytosis is by no means a constant feature, and we have found neither the white-cell count nor the differential count of much value in diagnosis or prognosis.

COURSE OF THE ILLNESS

Often there is a history of a few days' malaise, with possibly a sore throat and a slight rise of temperature before the onset of the abdominal pain. It is for treatment of this pain that the child is sent to hospital. The general appearance of the child when first seen often suggests scarlet fever, with flushed face, circumoral pallor, strawberry tongue, and injected fauces. The tonsils may be definitely infected. The respiration-rate is moderately raised, and examination of the chest commonly reveals an impaired percussion note with diminished air entry at the right base, and a pleural rub in the axillary line.

The abdominal pain is usually of a colicky type and is very variable in site and in intensity. Tenderness may be found anywhere in the abdomen, with a preference for the right side, but does not show any definite localisation to McBurney's point. The variability of the pain and tenderness is such a feature of the disease that, by the time the physician has called the surgeon, the picture may have changed from a right-sided to a left-sided lesion, or vice versa. Vomiting, and even nausea, are by no means constantly present, and guarding of the abdominal wall is very rare. Rectal examination sometimes reveals glands large enough to be felt on the anterior surface of the upper third of the sacrum.

The temperature tends to be rather high, and tallies better with the general appearance of the patient than with the severity of the abdominal signs. It falls gradually to normal in 2–3 days, and by then all the abdominal symptoms will have subsided. A few signs may remain in the chest for about a week, but at the end of that time the child is usually well, and can be discharged from hospital in 12–14 days. If an operation is done, a flare-up of the chest symptoms is to be expected. The 28 children who were followed up had remained quite well for periods ranging from 3 to 26 months after discharge from hospital, and, up to the time of final examination, had had no further attacks of abdominal pain.

OPERATIVE FINDINGS

If laparotomy is performed, the most striking finding is a more or less gross enlargement of the mesenteric glands, which are bright pink, firm, and discrete. The adenitis is most pronounced in the glands of the ileocæcal angle, but it is usually possible to palpate glands all the way up the mesentery. Injection and thickening of the appendix is present in varying degrees, and the naked-eye appearance of the cut surface of the appendix suggests a thickening of the submucous coat. The few appendices that we had sectioned did, in fact, show a submucous lymphatic hyperplasia. Appendicular obstruction was present only in the one patient quoted above, who had appendicectomy performed on her second admission to hospital. About a third of the cases had a small amount of clear fluid in the peritoneal cavity. Occasionally the terminal ileum was thickened and apparently œdematous.

DISCUSSION

We have been stimulated to report these cases because we are convinced that they are examples of a not very uncommon disease which is not always easy to distinguish from acute appendicitis in children, but, unlike appendicitis, is much better not treated by operation. Several descriptions of acute non-specific abdominal adenitis appeared in the American journals in the years immediately before the 1939–45 war. The main interest of the descriptions revolved round the difficulties of distinguishing the disease from conditions requiring urgent surgical treatment. The colicky nature of the pain is mentioned by all these writers, and McFadden (1927) had previously noted it. The indefinite localisation of the tenderness is repeatedly emphasised. We agree with Ian Aird (1945) that in practice the distinction from acute appendicitis is easier than a written description of the signs and symptoms can suggest. Most writers, Aird among them, have found that the attacks of pain are multiple and recur at intervals over a year or more. Our experience is that there is very seldom any previous history of abdominal pain.

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While Adams and Olney (1938), Rosenberg (1937), and Foster (1938) were as impressed as we were with the frequency of infections of the upper respiratory tract as an associated factor in acute lymphadenitis, none of them mentions the chest complications which were a striking feature of our cases and have influenced all our conclusions on treatment.

It is now generally recognised that acute appendicitis, whether in children or in adults, is an acute appendicular obstruction, and that early operation is essential and life-saving. It is therefore a responsibility to insist that there is an acute abdominal condition in children which does not require operation; but we are convinced that only in one of our cases was anything gained by operation, and that the children who did not have their abdomens opened had on the whole a much less serious illness than those on whom appendicectomy was performed. Acute appendicular obstruction is characterised by the sequence of acute onset of central abdominal pain, vomiting, and tenderness localised to the right iliac fossa. In the few cases of abdominal lymphadenitis in which the tenderness remained definitely localised to the right iliac fossa, we felt that we had no choice but to operate. Despite further experience of lymphadenitis, there will still be cases in which fear of missing an obstructive lesion, which may have supervened on the inflammatory condition, will lead us to decide on laparotomy. We believe that the risk of collapse or consolidation of the lung complicating the infection of the respiratory tract is a very definite reason for avoiding operation in every possible case. When the decision has been made not to operate, no treatment is necessary beyond warmth and a light diet, with rest in bed, and possibly sulphonamide insufflations of the throat. Sulphonamides by mouth were given in many of our cases but did not affect the course of the illness, except when pneumonia was present.

The cause of acute abdominal lymphadenitis is not known. The white-cell counts exclude glandular fever. Various observers have had glands sectioned. McFadden believed that the cause of the adenitis was probably infection by the bovine tubercle bacillus with a superimposed condition such as acidosis. American writers, on the other hand, have been convinced of its non-tuberculous nature, and Ian Aird (1945), in his recent report from the Royal Edinburgh Hospital for Sick Children, is most emphatic that the condition is non-tuberculous and that to label it tuberculous is wrongly to prejudice the child's future. We have seen no reason to suspect tuberculosis in any of our cases, and the subsequent history of the patients is strong presumptive evidence against a tuberculous origin for the adenitis. In 17 cases we took swabs from the pharynx, and from 10 of these hæmolytic streptococci were grown; in 5 *Streptococcus viridans* only was grown. In 2 cases no pathogenic organisms were found. The abdominal glands were sent for culture in a few cases, and in some the peritoneal fluid also. No growth was obtained in any case.

Histological examination of the glands and of the appendix has shown a non-specific acute or subacute inflammatory lesion. It seems possible that the glandular inflammation is due to a virus infection, and that complicating this (perhaps activating it) is a pharyngeal streptococcal infection. Of this hypothesis we have, of course, no proof. Ian Aird suggests a virus infection as the most likely cause.

It is interesting to speculate on the common occurrence of a right-sided chest lesion. The direction of the mesenteric attachment may favour spread of the infection to the right cupola of the diaphragm, and thence to the right pleural membrane.

CONCLUSIONS

Acute abdominal lymphadenitis in children is a clinical entity.

The outstanding features of the disease are colicky abdominal pain, simulating appendicular colic, but varying in intensity and associated with shifting tenderness; pharyngitis, sometimes accompanied by cervical adenitis, often with flushed facies, circumoral pallor, and a strawberry tongue; diminished air entry at the base of the right lung and a pleural rub.

Surgical intervention is contra-indicated in the majority of cases, but hospital treatment is advisable because the disease does carry with it a slight but definite risk of the supervention of an obstructive lesion of the appendix.

Consolidation of the lung is very likely to follow operation.

It is suggested that the cause of the adenitis is infection by a virus, and that the coexistence of a streptococcal infection of the upper respiratory tract precipitates the acute abdominal syndrome.

We wish to thank Dr. J. L. Dunlop, M.O.H. to Hertfordshire County Council, for permission to publish the account of these cases.

REFERENCES

Adams, W. E., Olney, M. B. (1938) *Ann. Surg.* **107**, 359.
Aird, I. (1945) *Brit. med. J.* ii, 680.
Foster, A. K. (1938) *Arch. Surg., Chicago*, **36**, 28.
McFadden, G. D. F. (1927) *Brit. med. J.* ii, 1174.
Rosenberg, S. (1937) *Arch. Surg., Chicago*, **35**, 1931.

ARTIFICIAL PNEUMOPERITONEUM AS AN EMERGENCY MEASURE IN SEVERE HÆMOPTYSIS

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SINCE pneumoperitoneum has been introduced into the treatment of pulmonary tuberculosis and is now being used on a wider and more systematic scale than before, its value in dealing with severe hæmoptysis may be illustrated by two cases of different type.

CASE 1.—A married woman, aged 30, a known case of pulmonary tuberculosis with positive sputum, was first treated in this hospital in January, 1944, for severe hæmoptysis, which ceased within a few days. She was readmitted in May, 1944, again with severe hæmoptysis. She coughed up almost a quart of blood the first day, and daily amounts of 6–20 oz. during the ensuing eighteen days. On the second day of admission her hæmoglobin was 65% (10·2 g.) and her blood-sedimentation rate 88 mm. in the first hour. Routine measures (ice-bags, codeine, and sedatives) either did not stop the hæmorrhage or had only a very temporary effect. Radiography showed a right apical lesion including several very small cavities.

On the eighteenth day, as the bleeding was still severe and the patient looked extremely pale, an artificial pneumoperitoneum of 750 c.cm. of air was induced below the left costal margin. Within an hour the hæmoptysis ceased, and it did not recur in the ensuing two months. During this period pneumoperitoneum refills were continued weekly until she was transferred to a sanatorium. Radiography showed a rise of $3^1/_2$ in. of the right and 2 in. of the left diaphragm. Her Hb gradually rose to 92% (14·3 g.) and within four weeks her blood-sedimentation rate fell to 25 mm. in the first hour. There was no abnormality of bleeding-time, clotting-time, prothrombin level, or platelet count.

CASE 2.—A married woman, aged 48, had ten years' history of cough, a fair amount of purulent sputum, and frequent hæmoptyses. She was previously suspected of having pulmonary tuberculosis, but numerous sputum tests were negative. On admission she said that a month previously she had coughed up about a pint of frank blood, and since then a daily quantity of blood sufficient to fill a sputum flask of 6–8 oz. A few days before admission the hæmorrhage became more severe and remained so for the first four days. Radiography showed much displacement of the heart and trachea to the left. There appeared to be a small area of fibrosis in the right upper zone and small multiple cavities throughout the left upper and mid zones. A dense shadow in the left lower zone was mainly due to the displaced heart. Several sputum tests were again negative. Left upper- and mid-zone bronchiectasis was eventually diagnosed.

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For four days the routine treatment for hæmoptysis was unsuccessful. An artificial pneumoperitoneum of 800 c.cm. of air was induced as an emergency measure. The copious bleeding ceased the same day, and on the subsequent days there was only a small amount of blood mingled with the sputum, until on the tenth day after induction the sputum was free from any trace of blood. The pneumoperitoneum was continued with two refills in the first week and subsequent weekly refills of 800 c.cm. for another eight weeks.

Artificial pneumoperitoneum for severe hæmoptysis was first applied by Vajda (1933) in two cases of pulmonary tuberculosis. Since the recommendation of its wider use in the treatment of pulmonary tuberculosis, with a simple technique, by Clifford-Jones and Macdonald (1943), it has become known that the risk of complications is so small that this measure should be considered whenever the hæmorrhage is severe and does not respond to the usual routine treatment. Simmonds (1946), describing the hazards of artificial pneumoperitoneum, pointed out that in over 13,000 refills there were only 9 accidents, such as air-embolism and mediastinal emphysema; to these a small number of peritoneal effusions should be added. In contrast to this, an emergency artificial pneumothorax requires initially a large quantity of air to bring about an adequate collapse of the lung to stop the bleeding; but, if adhesions are present, as they commonly are, this will entail the danger of a tension pneumothorax with subsequent formation of fluid. Apart from this, an induction is often impracticable owing to an inadequate pleural space. Moreover, pneumoperitoneum can be induced without definite knowledge about the side from which the hæmorrhage originates, an assessment which is often difficult. In tuberculosis, pneumoperitoneum can be maintained by weekly refills; in bronchiectasis, however, the induction of air into the peritoneal cavity should be regarded simply as an emergency measure and should be stopped after the bleeding has ceased.

REFERENCES

Clifford-Jones, E., Macdonald, N. (1943) *Tubercle, Lond.* **24**, 97.
Simmonds, F. A. H. (1946) *Lancet*, i, 530.
Vajda, L. (1933) *Z. Tuberk.* **67**, 371.

POISONING BY D.D.T. EMULSION

REPORT OF A FATAL CASE

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ON March 19, 1946, a market-gardener's labourer, aged 32, was found dead at the entrance to some mushroom-growing sheds, the circumstances of the death being such that an inquest was held.

The man, who had been seen alive and well by his employer at 8.15 A.M., was found dead an hour later, lying on his face, and by his side was a small quantity of vomit. The only recent medical history was a complaint of stomach trouble and insomnia some three weeks earlier which had been diagnosed as functional dyspepsia; otherwise he was in good health. In the shed outside which he was found was a partly used 2-gallon drum of D.D.T. concentrated emulsion, some of which he had drunk.

At the necropsy, performed on the day of death, there were abrasions on the bridge of the nose and over the left eye, and the lungs were congested, the air spaces being filled with hæmorrhagic frothy fluid—i.e., a condition of pulmonary congestion. The stomach, which was dilated, contained 1/2 pint of fluid, consisting of partly digested food—the whole smelling strongly of the D.D.T. emulsion. The mucosa of the stomach and upper part of small intestine was congested. No other abnormalities were found.

The D.D.T. emulsion was intended for spraying mushrooms and had to be diluted 400 times before use. The deceased had presumably poured the emulsion from a 2-gallon can into a small jug, from which he had drunk it. There was a small quantity of vomit on the floor of the shed where the deceased was found, and this contained slightly less than 1/2 oz. of emulsion. The stomach contents, on analysis, contained about 6 oz. of the concentrated emulsion. This emulsion contained 20% of D.D.T. dissolved in methylcyclohexanone (40%). It is unlikely that any considerable amount of the emulsion would have been absorbed by the stomach in the short time elapsing before death. There were relatively small amounts of paraffin hydrocarbons present together with emulsifying agents. It was considered, however, that in view of their nature and the relatively small proportions present, these constituents did not play any part in causing death. We calculate that the total quantities of D.D.T. and methylcyclohexanone taken were at least 34 g. and 2·4 oz. (by weight) respectively, these being the amounts found in the stomach. It is estimated that the deceased weighed 148 lb., indicating a concentration of 500 mg. of D.D.T. per kg. of body-weight.

DISCUSSION

There is little doubt that this man died of drinking about 6 oz. of concentrated D.D.T. emulsion, and this was the verdict returned by the coroner. Death may have been due to the D.D.T. or the methylcyclohexanone, or both acting in combination.

D.D.T. was present in a concentration of 500 mg. per kg. of body-weight. The lethal dose for man and animals has been estimated to lie between 150 and 600 mg. per kg. of body-weight (Hill 1946). In necropsies on a negro child and on baboons pulmonary œdema was a constant finding (Hill and Robinson 1945). In our case pulmonary congestion was an outstanding feature of the necropsy. Hill and Robinson also report incoördination and paralysis of the legs immediately preceding death. In our case, from the position of the body—lying on the face and near the poison—it is reasonable to suppose that the poison acted quickly, paralysing the man's legs and pitching him on his face; and the paucity of the vomit suggests that unconsciousness supervened rapidly.

The solution of D.D.T. in fatty oils is stated definitely to increase its toxicity; but the effects of solutions in cyclohexanone are not necessarily comparable to those of oily solutions (United States Public Health Service 1944).

Methylcyclohexanone is not a recognised industrial poison, and no cases of poisoning by it have been described. Experiments on animals, with various concentrations in air, show irritative effects (Lehmann and Flury 1943). Naturally enough, data on the effect of taking methylcyclohexanone by mouth are lacking. Perhaps the nearest chemical parallel about which information is available is another saturated ketone (also an irritant)—acetone. Acetone in doses of 15–20 g. given daily for several days produced no ill effects (Browning 1938). The congestion of the mucosa of the stomach and upper part of the small intestine might be explained by the local action of the solvent.

Accepting the lethal dose given above, sufficient D.D.T. was swallowed to have caused death. From the recorded death of a baboon (Hill 1946) within 45 min. of taking D.D.T. by mouth, it appears by analogy that the amount of D.D.T. taken in our case could have explained respiratory failure in less than an hour. In the absence of precise data on the toxicity of methylcyclohexanone taken by mouth, the balance of evidence seems to suggest that death was due primarily to the D.D.T., though there can be little doubt that the solvent assisted the toxic action of this compound.

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SUMMARY

A labourer swallowed, in its concentrated form, with fatal results, 6 oz. of D.D.T. emulsion intended to be diluted 400 times.

The necropsy showed pulmonary and gastro-intestinal congestion.

Our thanks are due to Dr. A. K. P. Tobin, of Formby, who performed the necropsy; and to the information service of the Factory Department.

REFERENCES

Browning, E. (1938) Toxicity of Industrial Organic Solvents, New York.
Hill, K. R. (1946) *Brit. med. J.* i, 255.
— Robinson, G. (1945) *Ibid*, ii, 845.
Lehmann, K. B., Flury, F. (1943) Toxicology and Hygiene of Industrial Solvents, Baltimore.
United States Public Health Service (1944) *Publ. Hlth Rep., Wash.* suppl. 177.

TROPICAL EOSINOPHILIA IN EGYPT

REPORT OF A CASE

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So far as we know only two cases of tropical eosinophilia have been recorded outside India. Emerson (1944) described one in America in a man of 30 who developed it 8 months after his return from India, after his resistance had been lowered by a severe intercurrent infection (abscess of the liver). Parsons-Smith (1944) reported a case which developed in Egypt, but unfortunately he did not state whether his patient had previously been to India or in contact with Indians. The following case shows that tropical eosinophilia is not limited to India, because the patient had not left the Middle East since 1913.

CASE-RECORD

A Syrian dental surgeon, aged 52, had gone, when aged 18, on a journey to Ceylon, Australia, and America, where he graduated at Pennsylvania. Four years later (1913) he settled in Cairo and never travelled again, except to Lebanon for his summer holidays. He had severe typhoid in 1931.

From 1936 to 1942 he experienced every year a moderate chronic pyrexia of 99·5°–101° F, beginning in May and disappearing in August after rest and fresh air in the Lebanese mountains or in Alexandria. Hæmatological examinations for brucellosis, malaria, and enteric fevers were always negative.

In February, 1942, the fever started again, followed two or three weeks later by "asthmatic bronchitis," with nocturnal paroxysmal cough, dyspnœa, and orthopnœa. He usually obtained some relief from adrenaline, lobelia, and potassium iodide. In the winter of 1943 the paroxysmal attacks were so frequent and severe, both by day and by night, that he retired from his practice.

In June, 1943, he was first examined and thoroughly investigated by me. He was then dyspnœic, pale, and obese. Temperature 99·5°–101° F. Attacks of severe paroxysmal coughing, with regular nightly exacerbations. The attacks differed from asthma by the absence of wheezing and expiratory distress; they were relieved by the expectoration of purulent nummular sputum. Chest not barrel-shaped but slightly hyper-resonant. Expiration prolonged. Few rhonchi; widespread sibilant chiefly expiratory râles; numerous moist râles, expiratory and inspiratory, over the lower lobes. No distinctive abnormalities of the chest radiogram except exaggerated hilar and vascular branching shadows. Heart normal. Spleen not enlarged. Liver of normal size. Blood-pressure 130/75 mm. Hg.

The most acceptable diagnosis at the time seemed to be severe chronic asthmatic bronchitis in an obese patient; but the fever and constitutional upset could not be attributed solely to chronic asthmatic bronchitis, and there was no satisfactory explanation of the leucocytosis (24,000 per c.mm.), almost exclusively due to normal mature eosinophils. The patient was given symptomatic treatment and kept under observation.

On reading Weingarten's (1943) article in May, 1944, I examined the patient again and noted the following details: red cells 4,500,000 per c.mm., Hb 90%; white cells 21,000 per c.mm. (neutrophils 27%, mononuclears 2%, lymphocytes 15%, eosinophils 56%); sputum viscid, hyaline, and contained pearled translucent particles; no tubercle bacilli, spirilla, or spirochætes present; few eosinophils. Blood Wassermann and Kahn reactions negative. Blood-urea 0·056%. No parasites in the stools.

A course of acetarsol was started on May 29: 0·25 g. for four days followed, after two days' rest, by a daily dose of 0·50 g. until 13 g. had been given. At this point complaints of numbness and weakness of the limbs obliged me to stop the drug. Further attempts to resume it met with the same complaints. The accompanying table shows the white-cell counts immediately before, during, and after the acetarsol treatment, the dates of treatment being shown in italics.

The second and third counts show an increase in the total white cells, chiefly due to the rise in eosinophils. This transient increase corresponds to a period, from June 3 to June 11, during which the clinical signs and symptoms were perhaps the worst in the whole illness; this period followed the first three days of acetarsol administration. Improvement began on the nights of June 13 and 14, when the attacks of coughing were much less frequent and severe, and for the first time the patient slept calmly without orthopnœa (for the last two years he could only sleep propped up in a half-sitting position). On June 30 he had no symptoms and signs, except fever which persisted for five more days, after which he regained normal health.

Date	White cells per c.mm.	Neut. %	Mono. %	Lymph. %	Eosin. %
May 29	21,500	23	1	16	60
June 3	24,000	23	2	20	55
,, *9*	25,000	23	2	18	57
,, *17*	12,000	36	5	28	31
,, *21*	8800	41	5	26	28
,, 24	9200	59	7	20	14
Aug. 26	12,000	51	8	26	15
Sept. 11	9000	53	10	27	10

DISCUSSION

This case conforms with Weingarten's description (1943), except for the absence of splenomegaly and the long duration of the fever, which continued throughout the illness, being the first symptom to arise and the last to disappear. The persistence of a mild eosinophilia despite complete clinical cure is probably related to inadequate dosage of acetarsol.

The patient had not left the Middle East since 1913. His journey to Ceylon and Australia 33 years ago can hardly be relevant. Hence it appears that the disease was acquired in Egypt. Further studies will show to what extent tropical eosinophilia is prevalent there. White-cell counts should be done in cases of "chronic bronchitis" and "chronic asthmatic bronchitis" accompanied by much constitutional upset, and arsenical treatment should be given in cases showing a high leucocytosis due to an increase of eosinophils.

I wish to thank Dr. Farid Tabet, of Cairo, for carrying out all the laboratory investigations and Captain G. de Chalus-Heath for translating my paper.

REFERENCES

Emerson, K. jun. (1944) *U.S. nav. med. Bull., Wash.* **42**, 118.
Parsons-Smith, B. G. (1944) *Lancet*, i, 433.
Weingarten, R. S. (1943) *Ibid*, i, 103.

"... I do believe, and few experienced men would differ from me, that one-third of all our students are ill-fitted, or unfitted, for university work. There is yet another matter which is more serious still, and makes, to my mind, a greater change since I was young: and that is the way men come to the university, not for the love and joy of learning, but for the business of passing an exam. They do not hitch their wagon to a star as so many of my old companions did; they only want a degree, and a job. In short, we have plenty of undergraduates, but a sad lack of students."—Sir D'ARCY THOMPSON, F.R.S., professor of natural history, University of St. Andrews, in the *Times*, Aug. 9.

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Preliminary Communication

RENAL PATHOLOGY IN THE LIGHT OF RECENT NEUROVASCULAR STUDIES

IN September last, one of us stated [1] that the renal anoxia found in a number of pathological conditions was probably "the result of overstimulation of the vascular nerves" and that, with certain colleagues, he had lately begun "what we hope will be a full-scale experimental study of the effects of direct, central, and reflex stimulation of vascular nerves upon the various organs of the body"; in the next sentence he specifically mentioned the kidney, and this is the organ in which we have hitherto more particularly studied the vascular effects of these various types of nerve-stimulation.

A preliminary printed account of our principal findings was pre-circulated to members of the Physiological Society in connexion with our demonstration made to the society on June 15, 1946.[2]

In brief, we have shown that with appropriate nerve-stimulation, both in animals with the abdomen *unopened* and in those in which the kidneys have been exposed, the renal blood-flow may be diverted from its commonly accepted course, and that as a result the cortex may be partly or wholly deprived of its supply.

The first evidence of this was the most striking as it was obtained, by *radiographic* means, in the *intact* animal. For we found that (as a result of the application of a tourniquet for a number of hours to the left hind-limb) the left renal circuit-time was shortened by virtually a half, though the calibre of the renal artery was at the same time reduced by a quarter. The only explanation of these simultaneous effects was, in our view, a vascular short-circuiting.

Further evidence of such short-circuiting was obtained in laparotomised animals after various types of nerve-stimulation:

(1) The blue colour of the blood in the renal vein changed partially or wholly to red. In some animals the appearance of the red blood was observed to be accompanied by pulsation of arterial type.

(2) Red streamlines appeared in the renal vein after the cortex had paled and while it still remained pallid.

(3) Dyes injected into the arterial side of the circulation appeared in the renal vein but did not stain the surface of the kidney (fig. 1*c*). On section, the cortex was seen to be unstained while the medulla, and especially its subcortical part, was deeply coloured by the dye (fig. 1*d*). This was in marked contrast to the right unstimulated kidney in which both cortex and medulla were stained, the former more deeply than the latter (figs. 1*a*, 1*b*). The same information has been obtained by radiographic methods (fig. 2).

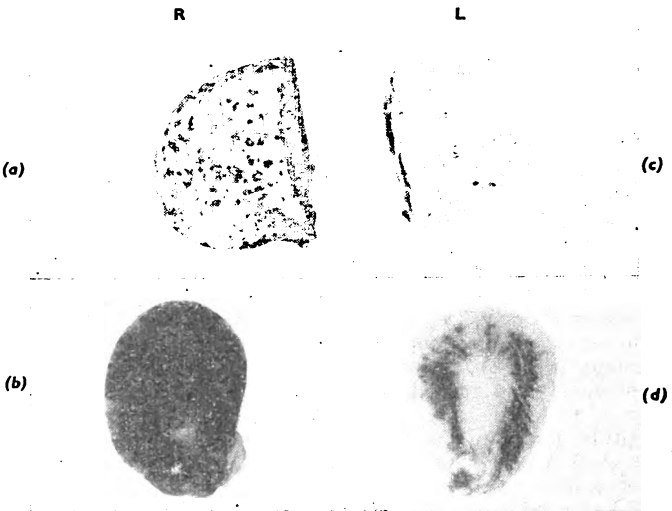

Fig. 1—Photographs of right and left kidneys after prolonged stimulation of the central end of the divided left sciatic nerve; dye injected directly into the renal arteries. (*a*) Right kidney: the dye has come to the surface. (*b*) Right kidney: on section, the dye has perfused throughout. (*c*) Left kidney: the dye has not reached the surface. (*d*) Left kidney: on section, part of the medulla is deeply stained but the dye has not reached the cortex.

The above observations show that as a result of appropriate nerve-stimulation the blood may be diverted wholly or partly from the cortex and short-circuited through medullary (especially subcortical) blood-channels. The large potential capacity of these by-passing channels enables them to transmit the whole of the renal blood

1. Trueta, J. *Lancet*, 1945, ii, 415.
2. This account was accepted at the meeting and will appear in the September number of *Journal of Physiology*.

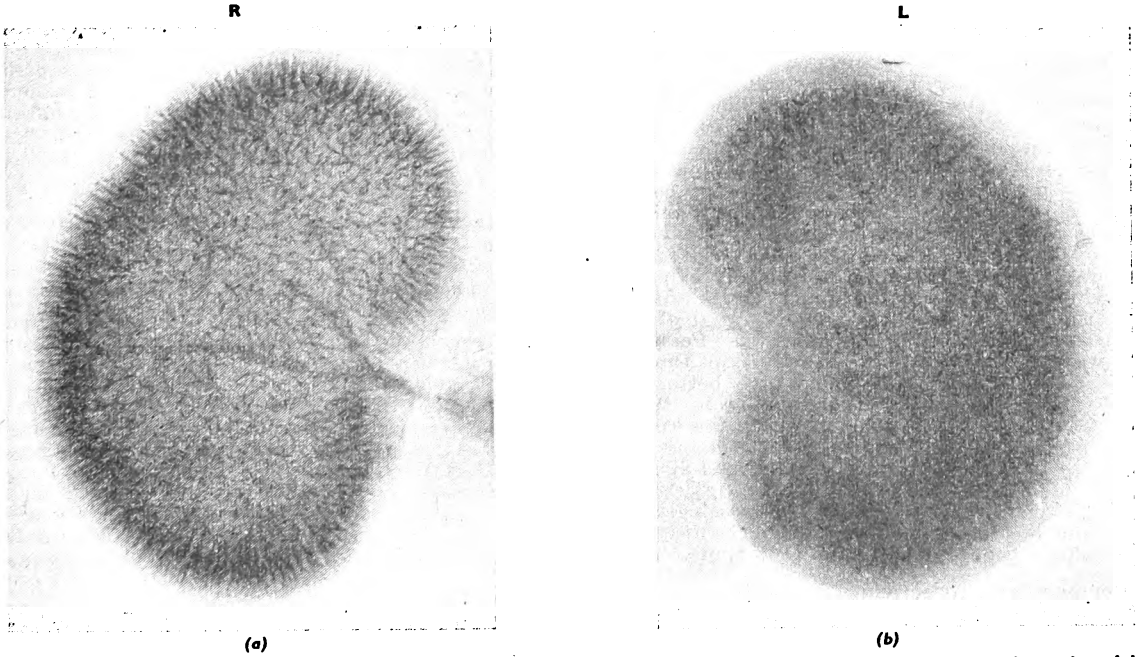

Fig. 2—Radiographs of right and left kidneys after stimulation of left renal artery; radio-opaque substance injected into the abdominal aorta above the renal arteries. (*a*) Right kidney, showing the vascular supply extending to the cortex. (*b*) Left kidney: the vascular supply has failed to reach the cortex.

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inflow whenever the supply to the cortex is diverted and the latter thereby rendered ischæmic.

To locate the by-passing channels histologically, particulate material was injected in place of dyes, and was found to fill vasa recta and their loops, as well as a subcortical plexus of vessels (also of very much more than capillary calibre), suggesting that these two sets of vessels were the anatomical channels involved. These histological studies are being continued.

The above researches, then, show that in the experimental animal a renal circulation can be continued through the medulla whilst the cortex is functionally ischæmic. We may fittingly conclude this section by noting that under such conditions the flow of urine in the ureter decreases or may be entirely suppressed.

IMPLICATIONS

The result of the experimental work described above makes us stress the great importance of a mechanism by which a temporary or permanent cortical ischæmia may be produced without arrest of the renal circulation. In many of the conditions in which anuria is found, lesions in the cortex interpreted as being due to ischæmia are constantly present, and in addition the medulla is found to be congested. An explanation for these lesions can be found in the neurovascular mechanism demonstrated in our experimental animals. It seems that nerve-stimulation could be produced centrally or peripherally by a variety of noxious agents and that the picture seen in many loosely related syndromes—e.g., "sulpha kidney," incompatible-transfusion kidney, Weil's disease, and some forms of nephritis—is the result of a defence device by which the cortex of the kidney is excluded from the circulating toxin or other noxious agent, and thus protected. Too prolonged operation of the device results in permanent damage.

The same protective mechanism may fulfil another rôle in hæmorrhage and shock or conditions with decreased blood-volume by preventing the blood from reaching the filter of the kidney (the cortex) and thus conserving fluid.

The concept of a functional change-over, under various conditions, to a medullary renal circulation has obvious physiological, pathological, and clinical implications. For instance, the interpretation of renal function tests must be reconsidered. The pathology of hysterical uræmia, emotional anuria, and post-abortum and post-traumatic uræmia, and the response of these last two to splanchnic block, are readily explained.

Lastly, we believe that hypertension may be the result of disordered activity of some nerve-centre or centres, from which impulses are sent to the same vascular effector-organs as are involved in the cortical ischæmia and medullary congestion described by us above.

We hope to publish a full account of our work as soon as possible in book form.

We wish to acknowledge a grant received from the Medical Research Council towards the expenses of our experimental work.

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Reviews of Books

Cerebral Angiography with Perabrodil

ARNE ENGESET. Oslo: *Acta Radiologica*. Supplement LVI. Pp. 207. Sw. cr. 25.

SINCE Egas Moniz introduced cerebral angiography in 1927 there have been many important contributions, though none more important than his own. The present monograph, beautifully printed and produced, gives an account of 68 cases at the Oslo University neurosurgical and neurological clinics in the departments of Torkildsen and Monrad-Krohn. Case-histories are brief, but prints showing the angiographic appearances of the series are well reproduced. There is a useful review of previous work, though, as the author says, war-time conditions made it impossible for him to consult a number of journals, and this has led to a few striking omissions. German work is well covered, as is only natural. There is a brief review of methods and of opinions on angiography and on the cerebral circulation. Cerebral arterial and venous patterns cannot be interpreted correctly unless the clinician has a good knowledge of congenital variants as well as normal appearances. He has still to learn by experience what is abnormal by disease and in what way it is so. The book is decidedly helpful, for the reproductions of the radiograms are large and clear, as is the rule with the publications of *Acta Radiologica*. The contrast medium used in this series was 'Perabrodil.' Engeset was not afraid of the radioactivity of thorotrast but believed that perabrodil would give better filling of small vessels, especially those in brain tumours themselves. He thinks that this has been the case, and certainly several of the figures show tumour types differentiated by the varying small-vessel patterns. The X-ray exposures were made after injections of 2–6 c.cm. of perabrodil. Percutaneous angiography is discussed, but not in great detail, though the method has been considerably developed in the Oslo clinic.

DDT, the Synthetic Insecticide

T. F. WEST, M.SC., PH.D. Lond., F.R.I.C.; G. A. CAMPBELL, M.SC. Leeds, F.R.I.C. London: Chapman and Hall. Pp. 301. 21*s*.

THE index and the lists of references in this book indicate how much research has been done in the few years since D.D.T. was found to be so insecticidal; and information is still accumulating. The book is divided into two parts: the first deals with the chemical and physical attributes of D.D.T. and the different formulations and processes in which it can be incorporated; the second reviews the results of experimental work from the biological angle. Body lice and mosquitoes each receive separate attention and there are chapters on household pests, other pests affecting man and animals, and plant pests. This arrangement is convenient, but within the chapters the pests are arranged in alphabetical order, according to their common English names. Thus Onion eel-worm follows Mustard beetle, and Snails find themselves between Small plant bug and Southern army worm. In the chapter on D.D.T. in paints, where the authors give the results of some of their own experiments, rather large tables are erected to house rather small numbers of insects. In general, however, the information is carefully and judiciously summarised, and they have provided a useful handbook for anyone engaged in pest control.

Roentgen Diagnosis of Diseases of the Gastrointestinal Tract

JOHN T. FARRELL, jun., M.D., clinical professor of radiology, Graduate School of Medicine, University of Pennsylvania. London: Baillière. Pp. 271. 30*s*.

THIS volume is a condensed index of the radiology of the intestinal tract, comparable to a pocket-anatomy, and intended to emphasise the vital points which students must know. It tabulates Professor Farrell's techniques, and the approach to diagnosis by deduction, being based on notes that have been issued to students as a skeleton outline on which to build their experience into knowledge. Logical sequence of technique and observation are the lessons stressed, and the reader meets them on every page; moreover, the author employs the "Standard Nomenclature of Disease," making his book fit four-square into this excellent pattern. The book is well produced, and the large bold type invites the reader to peruse the text and not merely to turn over the pages and study the illustrations. Some of these unfortunately are not of the highest standard, but in spite of this all students of gastro-enterology will find the book of value not only for examination purposes but for quick reference.

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THE LANCET

LONDON: SATURDAY, AUGUST 17, 1946

The Lesser Circulation of the Kidney

FRESH light is shed on our conception of renal function by current work at Oxford, summarised in a preliminary communication from TRUETA, BARCLAY, FRANKLIN, DANIEL, and PRICHARD on p. 237, and circulated at a recent meeting of the Physiological Society.[1] Their investigations began in attempts to explain the mechanism of crush syndrome; and, having demonstrated that a nervous reflex profoundly alters the renal blood-flow, they proceeded by a series of experiments, which need not be recounted here, to disclose the existence of a delicately balanced alternative circulation through the cortex and the medulla respectively. The vascular architecture of the cortex is sufficiently complicated to be still the subject of anatomical investigation, although it has been intensively studied for many years. The arrangement and functions of the vasa recta, on the other hand, have been relatively neglected; though, displaying wisdom after the event, it may now be admitted that the peculiar leash-like disposition of these wide vascular loops in the medulla is not one that appears primarily related to the nutrient requirements of the tubules of that part. Their most important function seems to lie in the provision of an alternative route for the blood flowing through the kidney, whereby the important cortical circulation may, to a variable degree, be shut down. This functional conception has important physiological and pathological implications. Thus it becomes understandable how physiological diminutions in urinary output may be adjusted—for example, when large amounts of fluid are being eliminated from the body by other routes—without greatly diminishing the blood-flow through the kidney. It provides an explanation for the sudden cessation of diuresis in dogs subjected to an emotional stress [2] since the medullary bypass is under nervous control. This inhibition of diuresis was not demonstrated when the splanchnic nerves had previously been cut, and the kidneys denervated. The only obvious alternative explanation of these observations would be to suppose that the sole change lay in constriction of the cortical vessels, with resulting ischæmia. But this would mean that the vascular bed, through which a quarter of the blood-output of the heart flows, is suddenly cut out of the circulation. From this a sudden and dramatic rise in blood-pressure might be expected, unless a bypass were provided to take this extra volume of blood. There is no record of such a rise in blood-pressure. It is therefore reasonable to suppose that, during active diuresis, the cortical circulation is fully open, while in anuria the medullary circulation is in action and the cortical circulation is thus bypassed.

For pathologists this may well be the key to many conundrums. A certain type of renal lesion common to a variety of conditions, such as the crush syndrome, incompatible blood-transfusion, blackwater fever, and renal failure complicating abortion—to name the best known of them—is now generally recognised, and has been frequently described of late years. In these kidneys there are variable degrees of tubular degeneration and necrosis in the cortex; the cortex as a whole is relatively anæmic, though the interlobular veins may be engorged, while the vasa recta are conspicuously engorged; the presence of large numbers of pigmented casts within the tubules, especially the collecting tubules in the medulla, completes the main features of the picture. It is of interest to recall that SHAW DUNN and MONTGOMERY [3] observed, in a heterogeneous group of cases showing renal cortical necrosis, that the arrest of circulation was incomplete in the proximal parts of the interlobular arteries "owing to easier escape of blood through deep glomeruli whose efferents pass by short routes direct to the medulla and not to the cortical rete." Evidence has been collected pointing to an anoxic mechanism in the production of this picture, and the term "renal anoxia" has been coined for it by B. G. MAEGRAITH. In the letter by MAEGRAITH and R. E. HAVARD published in our last issue the belief is clearly expressed that, in this syndrome, there is "some redistribution of the blood-flow within the kidney. ... it is unlikely that the dynamics of the renal circulation will be elucidated until better techniques enable us to study the living functioning organ." This prophecy has been speedily fulfilled: the anoxia results from the shunting of blood from the cortex to the medulla. Supporting evidence from the angle of treatment is provided in the recent report by O'SULLIVAN and SPITZER [4] of a series of cases of acute renal failure complicating abortion. Two of the most serious of these were cured by a bilateral posterior splanchnic block, according to the method of KAPPIS. In both the response was dramatic, though in one the operation was at first ineffective and had to be repeated after six days, when the patient appeared moribund. This method of treatment, which according to O'SULLIVAN and SPITZER was first introduced by NEUWIRTH in 1922, is manifestly deserving of further trial in these cases of anuria.

Much remains to be learnt concerning the stimuli that deflect the renal blood from the cortex to the medulla, and the transitions that turn a physiological into a pathological process. The incidence of anoxic cortical changes, of the kind that have been mentioned, in such diverse conditions as sulphonamide therapy, *Clostridium welchii* infections, and burns suggests that certain toxins can initiate the reflex, which serves to protect the cortical elements from damage. We know nothing as yet of those minor adjustments of the renal circulation that are unattended by pathological sequelæ, but we may be justified in regarding the pathological examples as cases where a protective mechanism has been called too drastically into operation.

1. *J. Physiol.* (in the press).
2. O'Connor, W. J., Verney, E. B. *Quart. J. exp. Physiol.* 1945, **33**, 77.
3. Dunn, J. S., Montgomery, G. L. *J. Path. Bact.* 1941, **52**, 1.
4. O'Sullivan, J. V., Spitzer, W. *J. Obstet. Gynæc.* 1946, **53**, 158.

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Food for the Premature Baby

ABOUT half the babies who die during the first month of life are premature or immature, and two-thirds of these do not live more than twenty-four hours. High standards of antenatal and obstetric care are probably the only means of preventing these very early deaths. But the premature infant who survives more than twenty-four hours faces two further danger periods—in the second week, when feeding is particularly difficult, and later when the risk of infection is greatest [1]—and at these times good nutrition will not only favour survival but also reduce morbidity.

During the last few weeks of pregnancy the fœtus gains about 25 grammes (nearly 1 oz.) daily, and ideally the premature baby should do the same. In any newborn infant, however, there is bound to be a slackening of growth while the alimentary tract takes over from the placenta, and for the premature this transfer of function is apt to be harder, calling for skilful handling by his attendants. All premature babies lose weight at first, and few regain their birth-weight before the 10th day. Nevertheless from this time forward a regular gain in weight should be established, the aim being to give as much nourishment as can be comfortably tolerated. Human milk is generally considered the best food, both because it allows of a high calorie intake without much risk of gastro-intestinal disturbance and also because it confers a degree of immunity against infections. On breast-milk, according to LEVINE [2] and O'REILLY,[3] a daily weight gain of about 15 g. ($^1/_2$ oz.) can be expected after the first fortnight of life. Some workers, including HESS and LUNDEEN,[4] have, however, advised that the protein and mineral intake of premature infants fed on human milk should be augmented, and this has been done by giving up to a quarter of the daily feed as cow's milk, or by adding a dried casein supplement. In the paper which we publish on another page Professor MAGNUSSON and his colleagues state their case in favour of a supplement consisting of an amino-acid mixture prepared from casein by hydrolysis, and describe their results with a Swedish preparation called 'Aminosol.' This preparation is completely soluble in water and does not form curd; so the full supplement (2·5 g. daily per kilogramme of body-weight) can be mixed with the feeds of human milk from the time of birth without risk of food intolerance. Comparisons of the amounts of weight gained by infants during weekly periods with and without the supplement show that a daily gain of about 30 g. (1 oz.) was achieved repeatedly with the amino-acid mixture, and that the gain was much less without it, approximating to the 15 g. gain on breast-milk alone obtained during the second fortnight by LEVINE [2] and O'REILLY.[3] The Swedish workers have also compared the effect of the amino-acid supplements with that of equivalent amounts of undigested casein, and report that the results were always in favour of the predigested protein. From this they deduce that the digestive processes of premature babies cannot fully cope with protein; but it is a little difficult to accept this conclusion in the light of LEVINE's statement that the digestibility of protein is 85–90%, even on high intakes (6 g. per kg. per day) of cow's milk protein. The experimental work on which these last figures seem to be based is a study of nitrogen absorption in three premature babies, aged 33–40 days, with average weights of 2·1–2·6 kg. (LEVINE and GORDON [5]), and if younger infants had been investigated the utilisation of protein might have been less satisfactory; for JORPES, MAGNUSSON, and WRETLIND have found that, as the infant becomes more mature, towards the end of the second month the effects of casein supplements approximate to those of hydrolysed casein. Nevertheless, from comparative feeding experiments, whose details have not yet been published, LEVINE and his co-workers have come to believe that cow's milk mixtures are preferable to human milk in the routine feeding of small and young premature infants, because protein is tolerated better than fat. They give the milk mixture in quantities to provide 150 c.cm. of fluid, 120 calories, 6 g. of protein, 18 g. of carbohydrate, and not more than 2·5 g. of fat, per kg. per day, and babies thus fed are said to gain more weight (25–30 g. daily, against 15–20 g.) and retain more nitrogen (0·3 g. per kg. per day against 0·25 g.) than those fed on unmodified human milk.

Few authorities in this country would dare to recommend artificial feeding for young premature babies where human milk is to be had; but there seems to be no doubt that, whatever the food, a high protein intake is needed if a premature baby is to gain weight at the same sort of rate as it would have done in utero. Nature's perfect food needs supplementing when the infant has been born before Nature intended. It is already widely recognised that a premature baby's requirements of minerals (iron and calcium) and vitamins are larger than those of the full-term infant, and this list must evidently be extended to include protein.

Neglect of the Chronic Sick

"... a woman of 39 suffering from carcinoma of the cervix with incontinence of urine. The patient was treated with radium in 1940 since when she has been almost entirely confined to bed. She is separated from her husband and lives with a child aged 8, her mother an old-age pensioner, and a sister working as a cleaner. They live in a two-roomed house, all sleeping in one room, the patient in a bed to herself, the other three in another bed. The downstair room is used for living, cooking, and washing as there is not even a lean-to scullery. The lavatory is outside. The patient is mostly in bed but comes down for about an hour a day to sit in an armchair commode provided by the hospital. The case is well known to the M.O.H., but he seems unable to provide other accommodation."

And probably not only seems, but *is* unable to provide it. Cases like this are quoted in appalling profusion in a report just produced by the Institute of Almoners.[6] Last January the institute sent out a questionary to its members, inquiring into the present care of the chronic sick, and especially of cases of malignant disease. Almoners were asked what care was offered in institutions in their areas. Few, it appears, could describe any existing good provisions whatever.

1. Parsons, L. G. *Lancet*, 1944, i, 267.
2. Levine, S. Z. *J. Amer. med. Ass.* 1945, **128**, 283.
3. O'Reilly, J. N. *Proc. R. Soc. Med.* 1944, **38**, 57.
4. Hess, J., Lundeen, E. C. The Premature Infant, Philadelphia, 1941.
5. Levine, S. Z., Gordon, H. H. *Amer. J. Dis. Child.* 1942, **64**, 274.
6. Results of an inquiry undertaken at the suggestion of Sir Ernest Rock Carling. Obtainable from the Institute of Almoners, Tavistock House North, Tavistock Square, London, W.C.1.

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> "Several districts have isolated homes of good standard able to take semi-advanced cases in homes for incurables—e.g., Merseyside (women), Bristol, Bradford, Leicester; and the London hospitals find the existing homes for advanced cases in the London area very valuable. One report (Leeds) cites three city hospitals entirely occupied by chronic sick—983 beds in all—in two of which patients can get up and dress every day and go out; but the adequacy of the provision is not altogether borne out by other reports from the same area which state that accommodation is extremely lacking. Bristol notes the establishment of two hostels for elderly people and provision of meals by a mobile canteen. Bristol and Cardiff have home help schemes for households where there is illness, for a maximum of six weeks."

In a few places, notably Merseyside and Watford, conditions are said to be becoming more acceptable, and at Oldham a new institution, built on modern lines and well equipped, is said to be popular among patients who would not consider going to the other local institutions. No other "good provisions," however, are recorded; the rest of the 16-page report tells of bad provisions or none at all. The reputation of the service is bad; patients in extreme misery quite commonly refuse beds when they are offered, because they regard the conditions in chronic wards as intolerable—a prejudice which almoners cannot call ill founded:

> "The accommodation offered is in many instances in old, out-of-date buildings, quite unsuitable for the purpose of nursing patients who need especial care, in surroundings calculated as far as possible to give them confidence and cheer them in their last illness. They are usually old 'workhouses' built in some areas well off the beaten track, and consequently difficult of access. No attraction is offered to the right type of medical officer and nurse and no proper segregation of senile, chronic and dying patients is possible. Further they can seldom provide day accommodation for patients who can get up, and the only alternative for these patients is to remain in bed, losing what strength they have, and even in some instances the chance of their condition being sufficiently improved to remove them from the chronic category."

Unfortunately there is evidence that the treatment the chronic sick receive is often as grim as their quarters; and besides rough and depressing surroundings, with no arrangements for segregation of the insane and the dying, they are often—perhaps usually—given unattractive and unsuitable food.

Nevertheless those who find beds in institutions are in a sense fortunate. One dreadful story follows another, collected from all parts of the country, of people in the greatest possible need of skilled nursing and medical care—with fungating growths, in agony from metastases, incontinent, with cæcostomies, blind, or partly paralysed—living at home in unsuitable quarters cared for by an elderly or failing relative, by a young child, by neighbours in odd moments, or by nobody at all. In the whole of England and Wales only 10 homes intended primarily for the dying were reported. Though these—which mostly have a religious basis—are well run, they do not begin to solve the enormous problem; and moreover their name depresses patients and relatives, they are often difficult to get to, and they usually make no arrangements for patients who are still able to be up and about. Nursing-homes cannot be found under 5 guineas weekly; they have staffing problems, and give preference to acute cases. In many areas, especially in the North, there are no convalescent homes for patients with malignant disease for whom active treatment can do no more. In the few homes accepting such cases, incontinent patients and those with colostomies are nearly always rigidly excluded.

The almoners make plenty of suggestions for improving matters, many of them similar to those already put forward.[7] Better buildings and brighter surroundings are of course needed, and better means of segregating various types of patient. Smaller, scattered units are required in country districts so that patients can be near their homes and friends, and visiting times should be frequent, and arranged conveniently for the visitors. More homes are wanted on the lines of the Star and Garter Homes, where patients are encouraged to lead as normal a life as possible, with good treatment ready at hand. There should be wards and blocks for the chronic sick in the general hospitals, so that doctors and nurses in training learn about their care. In existing hospitals for the chronic sick the almoners think the first requirement is a great and early increase in the number of beds, so that advanced cases of malignant disease can be admitted without delay. The power to arrange admission should be transferred from the relieving officer to the local authority. "Better equipment, more homely conditions, room for personal possessions, no unnecessary rules, more small attentions and personal small comforts"—these are the things which the chronically sick specially deserve to help them to face their unhappy state.

Radioactive Isotopes

VALUABLE information about the supply of radioactive isotopes has now been given in *Science* in an announcement from Headquarters, Manhattan Project, Washington, D.C.[8] Since the end of the war, we learn, the staff there has begun to develop some of the peacetime potentialities of the uranium chain-reacting pile; but piles of special design may have to be built for efficient production of isotopes, and this will take time. The substances are created in these piles by (1) the fission of U235 nuclei, and (2) neutron absorption by non-fissionable nuclei placed within the pile. By means of these two processes a large number of fission products (about 25), ranging in half-life from a week to thirty years, is available in significant quantities. In the announcement six tables describe them—detailing their half-lives, the energies of their β and γ radiation, the probable contaminants, and the approximate maximum unit quantity available in curies, together with their products, which are often, though not always, radioactive. (It is not yet possible to supply concentrated stable isotopes.) No scale of charges is included, but it is suggested that a reasonable charge is "one based on the 'out-of-pocket' operational expenses necessitated by the non-project production and service program." The radioactive materials will not initially be distributed to private individuals but only to accredited institutions or organisations; and particulars of supply arrangements may be had from the isotopes branch of the Manhattan District Research Division. It should be remembered, however, that *Science* is an American publication, and it is possible that supplies will be restricted—at any rate for the present—to American workers. Naturally there is already a strong demand among our medical scientists for these important substances, and it is hoped here that this may be met from United States' resources until such time as the home plant at Harwell comes into production.

7. See, for example, *Lancet*, 1946, i, 841, 857.
8. *Science*, 1946, 103, 697.

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Annotations

SIGNS OF MENINGITIS

INTEREST in meningitis has been reawakened in the last few years by the improved prognosis with sulpha drugs and penicillin; but the mechanism of the specific signs of meningeal irritation has remained obscure. These signs are stiffness of the neck, neck retraction, and at times opisthotonos, together with Kernig's sign and the two signs described by Brudzinski—flexion of hips and knees on passive flexion of the neck, and the "leg sign" of flexion of the opposite hip when Kernig's manœuvre is carried out. Previous explanations, such as those based on increased muscle irritability or tonic neck reflexes, are unconvincing.

O'Connell [1] has now suggested that the basis of all these signs is tension on the inflamed intradural nerve roots, and has produced anatomical evidence in support of this view. By dissection on the cadaver and accurate marking of corresponding points on the spinal theca and the vertebræ, he has shown that flexion of the neck causes a cephalad movement of the spinal cord and theca relative to the vertebral column. In the cervical region a movement of 5 mm. may take place when the head is moved from full extension to full flexion, with correspondingly increased tension in the nerve roots. Similarly Kernig's manœuvre causes increased tension in the extradural lumbosacral roots, caudal movement of the theca, and some increase in tension of the cauda equina. The signs of meningitis are due to reflex muscle contraction, whose purpose is to prevent this tension; neck rigidity and retraction prevent head flexion and subsequent stretching of the cervical roots; the hamstring spasm, which is the essential feature of Kernig's sign, prevents increased tension in the cauda equina; and the hip flexion, observed in Brudzinski's neck sign, produces partial relaxation of the increased tension due to flexion of the neck.

This explanation was originally suggested to O'Connell by his work on signs due to prolapse of a lumbosacral intervertebral disk,[2] where, in most cases, tension on a nerve root stretched over the disk protrusion seems a more reasonable explanation than compression of the nerve. The signs of Kernig and Lasègue are clinically identical, and the different names have been applied according to whether the patient was suffering from meningitis or sciatica; now they have been shown to have the same anatomical explanation—reflex muscle spasm to prevent increased tension on the lumbosacral nerve roots. The eponyms could surely be discarded and the manœuvre be called the "straight-leg raising test."

A VERSATILE CARCINOGEN

THE Yorkshire council of the British Empire Cancer Campaign [3] this year celebrates a coming-of-age with its two centres of research at Leeds and Sheffield in almost full production. At both the extraordinary properties of 2-acetylaminofluorene continue to be exploited. The value of this substance lies in the wide variety of organs in which it induces cancer when given by mouth, the variety of susceptible animals, and the variation in organ incidence between different strains of the same animal. Most of the experiments have been done on mice and rats, but in Sheffield a Rhode Island Red cock developed a kidney carcinoma and all of four cats had multiple lung tumours after taking aminofluorene. New growths produced in rats by painting it on the skin include papillomas, basal-cell carcinomas, and spindle-cell tumours of great malignancy, and it is the first carcinogenic chemical to which rat skin has responded regularly with tumour production. Adenocarcinomas of the small intestine and mammary gland, and tumours of the ductus acousticus, have previously been grown. In mice, carcinomas of the thyroid, squamous papillomas of the forestomach, a transitional carcinoma of the renal pelvis, a squamous carcinoma of the cervix uteri, and tumours of bladder, liver, and mammæ have all appeared after prolonged feeding. Both rats and mice reveal a strain difference in liability to the tumours. Piebald rats respond rarely with breast tumours, while 60% of Wistar albinos develop them as a result of simple feeding; 50% of piebalds grow adenocarcinomas of the small intestine, but only 5% of the albinos. Among mice, a conspicuous strain variation in all tumour incidence is seen when aminofluorene is fed regularly by stomach-tube. These observations provide additional evidence in favour of the view expressed by Dr. Peyton Rous, in his Walker lecture,[4] that any hereditary influence in cancer is the inheritance by certain individuals of a special liability or responsiveness not to cancer but to one of the causes of cancer.

Among much else of interest in the report, it may be noted that in Sheffield mammary tumours, caused by methylcholanthrene in milk-factor-free mice, are still being studied. The mammary-gland tumours of mice, both those due to milk factor and those induced by chemicals, are being intensively examined by workers everywhere in the hope of reconciling or explaining the apparently divergent theories of cancer causation in this one organ of mice in which both can operate. According to one group of American investigators [5] the action of methylcholanthrene is a sequence started by focal injury succeeded by nodular proliferation and squamous metaplasia. The neoplastic alteration takes place while the growth is still a nodule. An interpretation from Leeds will be awaited eagerly.

ERYTHROBLASTOSIS FŒTALIS AND ITS TREATMENT

ERYTHROBLASTOSIS fœtalis manifests itself in three clinical forms [6]—as hydrops fœtalis, as icterus gravis neonatorum, or as hæmolytic anæmia of the newborn. These have in common an erythroblastæmia (primitive red cells in the peripheral blood), anæmia, and myeloid infiltration of the organs, especially the liver. Many stillbirths have a similar histology. The hæmolytic basis of the condition, long suspected, was confirmed by Levine and co-workers,[7] who showed in 1941 that the mothers of such infants were nearly always of the Rh-negative blood-group and that their serum often contained an anti-Rh agglutinin, while the affected infants were Rh-positive, having derived the Rh antigen of their red cells from the father. This finding has been abundantly confirmed. The conception is that the maternal antibody passes across the placental barrier and reacts with the red cells of the fœtus. This view has been supported by the work of Coombs and colleagues [8] who have demonstrated that the affected infants' red cells are sensitised.

Infants with hydrops fœtalis, if not stillborn, die within an hour or so of birth. At the other end of the scale, infants with hæmolytic anæmia of the newborn often recover spontaneously in a few months. Icterus gravis neonatorum has an intermediate prognosis. On the basis that these conditions were the several manifestations of a single hæmolytic process, blood-transfusion has been given an extensive therapeutic trial. On the basis

1. O'Connell, J. E. A. *Brain*, 1946, **69**, 9.
2. O'Connell, J. E. A. *Brit. J. Surg.* 1943, **30**, 315.
3. Report for 1945–46. From 5, Park Square, Leeds.
4. *Lancet*, July 20, 1946, pp. 92, 98.
5. Kirschbaum, A., Lane Williams, W., Bittner, J. *Cancer Research*, 1946, **6**, 354.
6. Diamond, L. K., Blackfan, K. D., Baty, S. M. *J. Pediat.* 1932, **1**, 269.
7. Levine, P., Burnham, L., Katzin, E. M., Vogel, P. *Amer. J. Obstet. Gynec.* 1941, **42**, 925.
8. Coombs, R. R. A., Mourant, A. E., Race, R. R. *Lancet*, 1946, i, 264.

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of the Rh incompatibility between mother and fœtus it was recommended early on by Levine and colleagues that these infants be given Rh-negative blood. Mollison [9] confirmed this recommendation when he showed that transfused Rh-negative red cells survived normally in these infants, while Rh-positive cells were eliminated unduly rapidly. Mollison's own cases and the series published by Gimson [10] suggested that by transfusion with Rh-negative blood the lives of many of these erythroblastotic infants could be saved. Cappell [11] in Scotland and American writers have also reported favourably on the prognosis for infants given Rh-negative blood. Nevertheless there is widespread disappointment at the results of treatment, though this feeling is rarely expressed in print because few observers publish their failures. Kernicterus (damage to the cerebral basal nuclei) is not prevented by the transfusion treatment, and the mortality from icterus gravis is still high. Moreover, as Wallerstein [12] points out, many infants die though no evidence of severe anæmia exists. He attributes kernicterus and parenchymal damage of the liver cells, [13] &c., to toxæmia, the toxin arising from the stroma of lysed red cells. On the basis of this hypothesis he recommends venesection-transfusion. The blood is withdrawn from the sagittal sinus and Rh-negative blood is transfused by a cannula into a vein. By alternate withdrawals and transfusions of 50 c.cm. it is possible to leave the infant with only 25% of its own blood, the rest being the transfused Rh-negative blood. Three severe cases were so treated, and Wallerstein concludes that "The results to date justify a more widespread use of this method." Other clinicians have practised this venesection-transfusion, when the diagnosis of the infant has been made antepartum, by using the cannulated umbilical vessels. This procedure seems safer than the use of the sagittal sinus.

Wallerstein's practice may be sound, but his hypothesis that the major damage arises from the "toxins" of lysed red cells has no evidence to support it. Other hæmolytic processes, such as congenital acholuric jaundice, where stroma is liberated in excess of normal, do not lead to kernicterus or liver degeneration and necrosis. It seems more likely that the maternal antibody, after passing through the placenta and entering the fœtal circulation, can be absorbed not only by the red cells but also by the tissue cells. It was originally thought that the Rh antigen was present only in red cells, but Boorman and Dodd [14] claimed to have demonstrated this antigen in the parenchyma of liver, kidney, and salivary glands, and even in low strength in saliva; Witebsky and Mohn [15] claim to have found it in amniotic fluid. On the basis of these observations it is easy to see how tissue cells could be damaged by the appropriate antibody. If the red cells take up most of the antibody the main feature would be a hæmolytic anæmia amenable to treatment by blood-transfusion; if, on the other hand, the tissue cells absorb most of the antibody, icterus gravis, hydrops fœtalis, or stillbirth might result. In this connexion, Wiener [16] has sought to divide erythroblastosis fœtalis into two disease syndromes, dependent not on the fœtal antigen but on the type of the maternal antibody. Two such types of Rh antibody are recognised—the iso-agglutinin which in vitro agglutinates Rh-positive red cells, and the blocking or incomplete antibody which does not agglutinate Rh-positive red cells but uses up the receptors of those cells so that known agglutinating anti-Rh sera can no longer agglutinate the sensitised cells. Wiener postulates that a maternal blocking antibody causes congenital hæmolytic disease (with anæmia and/or hydrops) while a maternal iso-agglutinin leads to erythroblastosis (with icterus gravis and kernicterus). This hypothesis, however, is not supported by any factual evidence, and though attractive seems almost surely wrong. In Britain at any rate the antibody in the serum of mothers of infants with icterus gravis is as often of the incomplete as the complete variety.

From the therapeutic point of view, given an affected infant, one requires a means of removing the damaging agent or antibody. The fact that transfused Rh-positive red cells survive poorly shows that there is an excess of this antibody (even though it cannot be demonstrated) or that the antibody can be liberated from a sensitised red cell or tissue cell to attack more red cells. So far such a means has not been devised. Even more does one require a means for avoiding this process of maternal iso-immunisation and the resultant fœtal damage.

9. Mollison, P. L. *Arch. Dis. Childh.* 1943, **18**, 161.
10. Gimson, J. D. *Brit. med. J.* 1943, ii, 293.
11. Cappell, D. F. *Glasg. med. J.* November, 1944, p. 125.
12. Wallerstein, H. *Science*, 1946, **103**, 583.
13. Gilmour, J. R. *Arch. Dis. Childh.* 1944, **19**, 1.
14. Boorman, K. E., Dodd, B. E. *J. Path. Bact.* 1943, **55**, 329.
15. Witebsky, E., Mohn, J. F. *J. exp. Med.* 1945, **82**, 143.
16. Wiener, A. S. *N.Y. St. J. Med.* 1946, **46**, 912.

PERSISTENT ENURESIS

THE study of enuresis may be accounted dull and tiresome, but it may lead to discoveries about the physiology and pathology of micturition, quite apart from the more immediate hope of finding a cure for an affliction which is sometimes almost tragic. Stalker and Band [1] have lately made a thorough clinical investigation of 67 cases of enuresis, and the most obvious practical result of this is their confirmation of the finding that ephedrine is effective in treatment. They studied all the patients suffering from enuresis who were seen at the Jordanburn Nerve Hospital. These patients had all reached the age of puberty and were of both sexes (51 males and 16 females). All the usual psychiatric methods of treatment were tried first, but with little success. In adults the ephedrine treatment was started with $1^1/_2$ grains (of the hydrochloride, *B.P.*) at night, and the dose was increased every few nights, according to its effectiveness, to a maximum of 3 grains. Smaller doses were also given by day if necessary. Fluids were restricted in the evenings. Of the 55 patients so treated only 4 were classed as failures, but on the other hand 19 defaulted (a characteristic of enuretics) and 9 were still sub judice at the time of writing; so those improved comprised less than half the total treated. There were 8 cures. These results seem to justify the authors' conclusion that ephedrine is no panacea but gives better results than other remedies. Certain other investigators, however, such as Browne and Ford-Smith, [2] have found it ineffective, and the explanation of this discrepancy is not clear.

Radiological abnormalities of the lumbosacral spine were found in just over half the cases, and most commonly the lesion was confined to the first sacral vertebra. Interpretation of these findings is difficult, because widely differing figures are given by different authorities for the incidence of these variations in normal people. For this there are several possible explanations, and one of them is supported by some evidence in Stalker and Band's paper. They found that, whereas the incidence of lateral defects (such as sacralisation) was the same in all age-groups, midline defects (failure of neural-arch fusion) occurred mainly in the early age-groups, thus suggesting that ossification is continuing during these years. The first sacral arch is always the last to join, and Jemma's [3] assertion that it may not do so until the 20th or even the 30th year seems likely to be true. In other words a radiological gap in the first sacral arch may be of no significance at all before the age of 30. Furthermore, the radiological evidence should be supported by clinical findings before a diagnosis of spina

1. Stalker, H., Band, D. *J. ment. Sci.* 1946, **92**, 324.
2. Browne, R. C., Ford-Smith, A. *Brit. med. J.* 1941, ii, 803.
3. Jemma, G. Le spine bifide, Naples, 1930.

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bifida occulta is accepted. Such findings are rare, and were absent in this series.

Constitutional factors were shown to play an important part in the causation of enuresis, particularly the psychological background, both individual and familial. Half of Stalker and Band's patients had some definite psychiatric disorder (the commonest being a psychopathic state); another quarter suffered from a subclinical anxiety state; and even the remaining quarter, though allowed to be within normal limits, were regarded as having anxious personalities. These findings suggest two questions—to what extent does the bias of the investigator colour such an assessment, and may not the enuresis be the cause (not the effect) of the milder psychological upsets? The family history showed a high incidence of psychiatric conditions among relations, and inquiry for enuresis revealed "an average of almost two other affected persons per case." Stalker and Band make the point that nocturnal enuresis is not an isolated phenomenon but one aspect of a derangement of the pelvic autonomic system, and they support this assertion by showing that in the same patient there are often associated manifestations, such as nocturnal frequency (rising at night), diurnal frequency and urgency, sometimes diurnal enuresis, and more rarely encopresis. In their opinion the disorder is not an overactivity of the local reflexes but a weakness of the cerebral inhibition of these reflexes. An interesting extension of this line of autonomic inquiry leads to the question of sleep, which is a vegetative function and may well bear a close relation to nocturnal enuresis. They say that two-thirds of their patients were heavy sleepers. But here again depth of sleep is hard to assess and to compare, and the normal range must be taken into account. Maybe two-thirds of all young people are heavy sleepers.

Many other aspects of this difficult problem are considered in this interesting paper, though no fresh ground is broken. Cystometry was done in 15 of the patients, but a routine measure of bladder capacity and of body-weight would have been simpler and perhaps more revealing. Nor do we feel sure of the value of the statement that "enuresis is not just a symptom, but a disease in itself."

MORTALITY TRENDS IN DEGENERATIVE DISEASE

THIS century has seen a steady rise in the *crude* death-rate from the cardiovascular-renal diseases which now form a large proportion of the total mortality. The rise in the toll of degenerative disease has prompted alarmist warnings of the ultimate effects on physical health of the crescendo in the stress of modern life. A more cheering note is struck in a recent bulletin[1] of the Metropolitan Life Insurance Company in the United States. There, if anywhere, the tempo of life is at a maximum, but among the policy-holders of that company there has been since 1911 a consistent decline in the *standardised* death-rate from cardiovascular-renal disease. The main source of this disparity lies in the standardisation or adjustment of the death-rate to take into account the ageing of the population; but there is more to it than that. Even within each age-group there has been a real decline in the death-rate from these diseases, particularly among younger people (under 24) of both sexes, and for both white and coloured races. Since much of this type of disease is the aftermath of a much earlier infection, whether rheumatic or syphilitic, we are now reaping the benefits of therapeutic successes in the treatment of bacterial disease. Decreasing demands for physical effort, from men because of mechanisation in industry and from women because of less frequent childbearing, are no doubt having a beneficial effect. Policy-holders are clearly a self-selected section of the population—they presumably include the wealthier, more intelligent, and more provident members of society. Among them, then, one would expect to see the influence of better nutrition, better environmental conditions, and medical care in the prevention of premature physical breakdown.

However cheering this picture may be it must be remembered that the main advances have been made in the field of infective diseases and their consequences in heart and kidney. The more strictly degenerative diseases such as arteriosclerosis still constitute a major and growing problem. Stimulated no doubt by the success against bacterial disease, the American life-insurance companies have organised a research fund to study the causes of disease in heart and arteries. We too have an ageing population and we must hope that this fund will yield results which can be widely applied in the care of the aged.

1. *Statist. Bull. Met. Life Ins. Co.* 1946, **27**, 5.

CHEMOTHERAPEUTIC MISTS

AEROSOLS, long used as vehicles for expectorant and bronchodilator drugs, are finding a more important rôle in chemotherapy. Quantitative studies have shown that by this means sulphonamides and penicillin can be introduced into the lungs in amounts and concentrations adequate for therapeutic purposes[1]; absorption takes place rapidly, and the drugs quickly appear in the blood, but a useful proportion is retained by the bronchial secretions, and, on another page, Dr. Humphrey and Dr. Joules report identification of penicillin in the sputum as long as six hours after a single period of inhalation. One benefit from this form of topical treatment is that three-hourly intramuscular injections are replaced by the less exacting routine of three or four inhalations daily. Coarse aerosols deposit in the bronchi, but fine aerosols appear to follow the transalveolar route, by which the drug is conveyed directly to the left side of the heart. Knott and Southwell[2] found that the blood-concentration of penicillin may be ten times greater in the left ventricle than in the right—a notable consideration when extrapulmonary lesions are under treatment. Aerosols cannot penetrate consolidated lung, and in pneumonia become locally effective only after absorption and redistribution by the blood. Their therapeutic value in such circumstances has been assessed by Eleanor Bliss[3]; working on rats with experimental pneumococcal pneumonia, she found that penicillin administered by inhalation was at least as curative as similar amounts injected intramuscularly.

During the last two years numerous clinical trials have been carried out in this country and in America. In particular, much useful information is provided by the careful reports of Olsen[4] and now, on other pages of this issue, by those of Dr. Humphrey and Dr. Joules, and of Dr. Southwell. There is general agreement that in most cases of bronchiectasis the volume, odour, purulence, and bacterial content of the sputum can be strikingly reduced; and on several occasions the opinion has been expressed that penicillin inhalations given before and after lobectomy add materially to the safety of the operation. From this, and from the imposing miscellany of conditions treated by Barach,[5] Vermilye,[6] and others it seems probable that the method will be more widely employed. Penicillin may presently be replaced or fortified by substances which will widen the range of controllable micro-organisms, and the need for such an extension is emphasised by the observation of Humphrey and Joules that, with the elimination of penicillin-sensitive organisms, coliform bacilli appear, owing partly

1. Mutch, N. *Lancet*, 1944, **ii**, 775. Mutch, N., Rewell, R. E. *Ibid*, 1945, **i**, 650.
2. Knott, F. A., Southwell, H. *Arch. Dis. Childh.* 1946, **21**, 16.
3. Bliss, E. A. *Bull. Johns Hopk. Hosp.* 1945, **77**, 411.
4. Olsen, A. M. *Proc. Mayo Clin.* 1945, **20**, 184.
5. Barach, A. L., Silberstein, F. H., Oppenheimer, E. T., Hunter, T. H., Soroka, M. *Ann. intern. Med.* 1945, **22**, 485.
6. Vermilye, H. N. *J. Amer. med. Ass.* 1945, **129**, 250.

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to unmasking but also, they consider, to an absolute increase. Several sulphonamides have already been employed; streptomycin aerosol has been reported as effective against infection by *Hæmophilus influenzæ*,[7] and 'Promanide' has been tried in pulmonary tuberculosis.

When bronchial drainage is defective, the benefits of penicillin inhalation are quickly lost. In bronchiectasis and chronic bronchitis, further courses are therefore needed seasonally or from time to time. Acute infections of the nasopharynx and bronchi, however, respond quickly, and it might be possible to prevent many of the septic complications in the ear, sinuses, and chest, which follow the common cold, if suitable apparatus were installed in clinics and schools.

SOYA BEAN AGAIN

THE soya bean has been cultivated in China, Manchuria, and Japan from time immemorial, and of late years has become an important crop in the United States and in Canada, though rather for industrial than dietetic purposes. In Europe it has been increasingly used for food, especially in war-time, and has acquired a position of esteem.

The composition of the soya bean is unique. Its protein content (N × 6·25) is estimated as running from 33% to 47%, whereas the pulses generally have but 20–23%: indeed no foods except cooked lean meat, or a hard cheese made from skimmed milk, come anywhere near it in protein content. Another advantage is its high percentage of oil, with much unsaturated fatty acid in its triglycerides. No ordinary pulse contains much fat, though the peanut resembles the soya bean in this characteristic. Finally its carbohydrates are not starch but dextrins, and there is more calcium and iron than in other pulses. From all this the value of soya bean as a food seems beyond doubt, if the disadvantage of its bitter taste can be eliminated—as it can. At the least its high protein content recommends its consumption when other protein is scarce; for even if the quality of the protein is low, its quantity may make up for this. Actually the earlier analyses of the amino-acid content of glycinin (the chief protein of soya bean) suggested that its quality is not low. Osborne and Clapp [8] demonstrated the presence of leucine, tyrosine, arginine, lysine, and histidine in fair amount; Jones and Waterman [9] added tryptophan; Czonka and Jones [10] raised the last workers' estimate by 30%; and Barnes and Maack [11] showed that methionine was present to 1·8%. Hence, though cystine and methionine are not well represented, soya protein has all the essential amino-acids investigated up to date.

So much for the armchair arguments for the use of soya bean as food—arguments which have led Henry Ford to cultivate it at Dagenham, and Hitler (they say) to give it to his storm troops. Unfortunately when we turn to accurate experiment on animals and human beings the case falls to the ground. Aykroyd and Krishnan,[12] well before the late war, showed that addition of soya bean to the diet of mission school-children improved their growth-rate not a whit, whereas skim-milk powder improved it remarkably. And now the whole subject has been reinvestigated by a subcommittee of the Nutrition Advisory Committee of the Indian Research Fund Association.[13] Working with young and adult rats and human beings, experiments were made on the biological values of soya bean and other pulses, and the effect of soya bean and other supplements on the growth of rats and of children was tested in the Universities of Dacca and Lahore, the Seth G.S. Medical College, Bombay, and the Nutrition Research Laboratories, Coonoor. The results were concordant and led to the conclusion that "although soya bean contains more of fat, minerals, vitamins and 'available' proteins than other pulses, it has, for some unknown reason, not proved itself superior to other pulses within the range of experiments reported. . . . Taking the results obtained so far into consideration, the subcommittee is of the opinion that as a supplement to typical Indian diets based on cereals, but adequate in quantity, soya bean has no special advantages over common Indian pulses."

Of course, as the committee says, this is not the last word on the nutritive value of the soya bean; but it seems to be losing a little of its prestige.

7. Olsen, A. M. *Proc. Mayo Clin.* 1946, **21**, 53.
8. Osborne, T. B., Clapp, S. H. *Amer. J. Physiol.* 1907, **19**, 468.
9. Jones, D. B., Waterman, H. C. *J. biol. Chem.* 1921, **46**, 459.
10. Czonka, F. A., Jones, D. B. *J. agri. Res.* 1933, **46**, 51.
11. Barnes, R. H., Maack, J. F. Nutritive Value of Soybeans, Minneapolis, 1943.
12. Aykroyd, W. R., Krishnan, B. G. *Ind. J. med. Res.* 1937, **24**, 1093.
13. Spec. rep. Indian Res. Fund Ass. no. 13, 1945.

A DIFFICULT DIAGNOSIS

IT has been said that serious disease is nowhere more liable to be overlooked than when it affects the pericardium.[1] Certainly tuberculous pericarditis, with its insidious onset and its confusing early symptoms, may easily escape diagnosis, and is probably more common than is generally believed.[2 3] The onset, unlike that of rheumatic pericarditis, is seldom associated with pain; the accumulation of fluid, being gradual, is well supported, and a very large effusion may form before attention is attracted by signs of mediastinal pressure; indeed as much as 2–3 litres has been aspirated. The fluid is more often blood-stained than serous, and it may be difficult to demonstrate tubercle bacilli either by culture or by guineapig inoculation. A further cause of difficulty is that the constitutional disturbances of active tuberculosis which attend the pericarditis itself may easily be attributed to the primary lesion in the lung, pleura, or spine, and diagnosis is then delayed until the development of cardiac tamponade. Sometimes, however, the condition arises in a patient (of any age) who has been in good health until a recent influenza-like illness; in these cases infection of the pericardium is attributed to direct lymphatic spread from reactivated tuberculous mediastinal or hilar glands; and prompt diagnosis is particularly important since the primary treatment is that of the underlying tuberculous focus.

If the patient survives, he develops the features characteristic of Pick's disease—enlarged liver, ascites, muffled heart-sounds, and small pulse-pressure—for which surgical treatment now offers the chance of dramatic cure. It may be that in future early recognition of tuberculous pericarditis and improved treatment will arrest the disease before this stage of constrictive pericarditis is reached. The induction of a pneumopericardium, already helpful in diagnosis, may also find a place in therapy. The value of local penicillin in acute coccal pericarditis is already established.[4] Is it too much to hope that antibiotics of the streptomycin group will provide the remedy for a condition which has hitherto resisted active medical treatment?

1. Hannesson, H. *Tubercle, Lond.* 1941, **22**, 79.
2. White, P. D. Heart Disease, New York, 1944.
3. Ellman, P. *Brit. Heart J.* 1945, **7**, 147.
4. Wise, A. W., Shafter, L. E. *J. Amer. med. Ass.* 1945, **127**, 583.

ACCORDING to present plans the House of Lords will consider the National Health Service Bill on Oct. 8 and 9, immediately after their return from the summer recess.

CALCIUM CARBONATE IN NATIONAL FLOUR.—The Minister of Food announces that, on the advice of the special diets advisory committee of the Medical Research Council, from Aug. 11 the rate of addition of calcium carbonate (creta præparata) to national flour has been increased from 7 oz. to 14 oz. per sack of 280 lb. This, it is stated, is to compensate for the increased content of phytic acid in 90%-extraction flour.

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Special Articles

NUTRITIONAL RETROBULBAR NEURITIS

NUTRITIONAL OPTIC NEUROPATHY

D. FITZGERALD MOORE
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LATE SENIOR MEDICAL OFFICER, WEST AFRICAN MEDICAL (COLONIAL) SERVICE

RETROBULBAR neuritis has been one of the most common nutritional diseases affecting prisoners-of-war (P.O.W.) and internees in the Far East. The repatriation of these patients has provided material for further investigation in this country, where formerly it had not been observed. In this paper I compare the information more recently acquired with the results of earlier work, and draw some conclusions about the prevention of this and associated conditions in other parts of the world.

Before doing so, I wish to acknowledge the splendid morale of the prisoners and the extremely fine work done by the medical officers to limit malnutrition by planning the available rations so as to achieve the best qualitative results and by devising ingenious methods of obtaining or developing extra sources of supply. Without doubt many lives were saved, and a firm control was gained over a situation which must otherwise have proved catastrophic.

The conditions, however, were such that a high incidence of malnutrition could not be prevented. Supplies of such essentials as ' Marmite ' and dried brewers' yeast—both preventive and curative of this ophthalmic condition in its early phases—could have been available only in very moderate amounts ; and, though thiamine and nicotinic acid were apparently more plentiful and put to the fullest possible use, other synthetic vitamins were also limited.

It has been shown (Nutrition Society 1946, Williamson 1946) that the P.O.W. were confined in two main areas—in Formosa and the northern area, and in Malaya. In both areas energy food values were fairly well maintained, but there were well-marked differences in the type and quality of the diets. In Formosa and the northern area the main source of carbohydrate was unpolished rice, or if the rice was polished it was often reinforced with barley in the earlier period of captivity. Soya bean was also supplied in fair amount. But in Malaya the rice was polished and of exceptionally poor quality, and it was not reinforced with natural foodstuffs. Also the protein was much more limited. In Formosa nutritional retrobulbar neuritis and keratitis (riboflavine deficiency), though common in the later period of captivity, was far less in evidence than in Malaya.

It has been generally accepted by those in charge that there was no real shortage of vitamins A and C, though there was a shortage of fats. But vitamin A was amply provided by the green leafy food, the extreme value of which was at once recognised, every possible means being taken to extend supplies. It has also been accepted that the outstanding vitamin deficiencies were those of the vitamin-B complex. The most instructive dietary tables, drawn up in the camps, demonstrate these facts in great detail.

Thiamine, though it could cure and prevent beriberi (in one camp, after the first initial outbreaks, beriberi was kept almost entirely in abeyance), could neither prevent nor cure retrobulbar neuritis. In general the results of treatment in nutritional retrobulbar neuritis were disappointing, but conditions were all against a successful issue.

If full use is to be made of this newer evidence, in the interests both of research and of nutrition, it is necessary to compare with these conditions which caused retrobulbar neuritis other known conditions which also have been shown to cause it, and the different circumstances in which it can arise, in the hope that some common factor or factors will emerge and point more definitely to the cause. For these purposes it is necessary to present again some of the known facts.

SIGNS AND SYMPTOMS

" Dimness of vision " or " indistinctness of vision " has been recognised for many years as associated either with secondary pellagra (Calhoun 1918, Carroll 1936) or with the common tropical syndrome now identified (Sebrell and Butler 1938, Sydenstricker et al. 1939, Kruse et al. 1940) as hyporiboflavinosis. Excluding earlier Japanese knowledge, the first real recognition of this syndrome was made in 1911 by Stannus, who not only described the general signs and symptoms but also drew attention to its association with pellagra. This, as a guide to subsequent investigation, seems to be a vital link.

In 1918 Scott described an acute condition which he believed to be toxic and which he called " the central neuritis of Jamaica." This occurred among coolies there whose diet consisted almost entirely of sugarcane. Among the general signs and symptoms were " itching of the eyes, congestion of the conjunctiva, slight photophobia, indistinctness of vision, burning sensations of the mouth, numbness and burning of the feet, and in some cases ataxia." Meagher (1936) identified a similar condition in the Solomon Islands. In Sierra Leone Wright (1928) described a condition which was identical with that described by Stannus, and which in 1930, in a privately printed report, he called the A and B avitaminosis of Sierra Leone. He was the first to introduce active treatment. In Nigeria I (Moore 1930) reported on defective vision associated with the same syndrome among school-children. I then viewed the visual condition as either a toxic amblyopia or a retrobulbar neuritis. Later (Moore 1932) the diagnosis retrobulbar neuritis was finally preferred and from that date has been constantly used. Still later (Moore 1937) the term " nutritional " was added on the suggestion of McCarrison. There are, however, some points it is felt advisable to restate here. The fundus appearances may vary greatly, though most commonly they are in keeping with a retrobulbar neuritis (partial optic atrophy). But some cases, even of long duration, showed no change at all, and in others a frank primary atrophy was simulated, and more exceptionally optic neuritis. Dansey-Browning (1946), Rich (1946), and Dansey-Browning and Rich (1946) in their helpful and detailed clinical reports on released P.O.W. have made similar observations. To meet all considerations, a more general term may be required, and " nutritional optic neuropathy " (as has been suggested) is a reasonable one.

Landor and Pallister (1935) recognised the syndrome in a Malay prison, and included " dimness of vision " among the symptoms described. They found cod-liver oil useless. They were the first to use autoclaved marmite in the more general condition.

Jimenez Garcia (1940), in Spain, investigated a similar syndrome among Europeans during the civil war of 1936–39. He also described a retrobulbar neuritis. He believes the condition is a B_2-complex deficiency. This very important work has been insufficiently recognised in this country. There were many cases not only of retrobulbar neuritis but also of other effects of vitamin-B deficiency, and results of therapeutic trials. A study of the conditions in the siege of Madrid must bear valuable comparisons with the privations undergone in the Far East.

More recent contributions are those of Wilkinson and King (1944) in China, and of Dansey-Browning (1946), Rich (1946), Dansey-Browning and Rich (1946), Garland (1946), Ridley (1945), Spillane (1945), Spillane and Scott (1945), and R. E. Wright (1946) in this country on released P.O.W., besides the reports of the medical

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officers in charge of the P.O.W. and internee camps, to whom special acknowledgment has already been made.

TREATMENT

In Nigeria, from 1931 onwards, treatment in the early phases of this condition was generally successful (see figs. 1–3). The following is a typical example from many others quoted in published work.

Nov. 13, 1937: an Ibo, aged 15 years, a thin depressed boy, with skin grey and dry, severe perlèche, dry scaly scrotum, raw red tongue, burning of the feet, and photophobia. Mother says he was cheerful before onset. Vision defective February, 1937, severely so by March. In June he was forced to leave school, as he could only "listen in class." Mother a petty trader. Diet: manioc 4 "cups" full daily, stockfish, red-palm oil, some green leaf, a small amount of meat occasionally, peppers, and salt. Vision 1/60. Unable to read print. Both disks, optic neuritis. Treatment: autoclaved marmite, one "cigarette tin" full weekly.
Nov. 26: mouth and perlèche entirely healed, scrotum better. Vision 5/60 J.20 pt.
Dec. 12: 6/36 J.12 pt.
Dec. 31: 6/12 J.8 pt. Skin shiny and bright, whole appearance altered, and patient delighted with progress.
Feb. 11, 1938: 6/6 J.1 pt.

If, however, treatment was delayed over six months, or perhaps a year, irreversibility became more manifest and increased with time. It appears to me that this

(a) (b) (c)

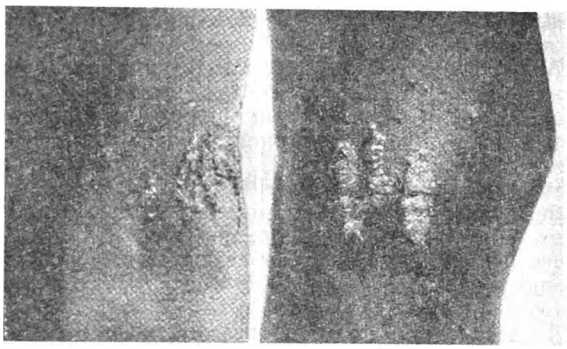
Fig. 1—"Joe," a Sierra Leonean, seen at Lagos in October, 1936, in conjunction with Dr. G. E. Dodds (now Senior Medical Officer, Nigeria): vision 5/60, 4/60, severe changes in optic nerves, and ataxia; history over two years; staple diet rice and manioc; (a) on first attendance; (b) after five days' treatment with marmite; (c) after eleven days' treatment. Visual condition was not followed up, as he was a member of a ship's crew in port only for that period.

factor has been the essential one which has counted so much among P.O.W. and not, as some would maintain, an irreversibility from the start of the illness.

With regard to prognosis, it was possible in Nigeria to follow up many cases for some years. Once the offending cause was removed, they did not worsen. This, it is felt, is of great importance so that patients may be reassured.

ÆTIOLOGY

The ætiology of nutritional retrobulbar neuritis in relationship to the more classical syndromes is still far from complete. I am satisfied, however, that it can be excluded from beriberi, though it can be associated therewith. The response I obtained with autoclaved yeast on the visual condition made this clear (Moore 1939). The investigations with thiamine in the P.O.W. camps surely brings further and impressive evidence against beriberi. In West Africa nearly all cases were either accompanied or preceded by hyporiboflavinosis (see also Hughes 1946). But it would not be safe to state that riboflavine deficiency caused the neural condition, for trials with riboflavine have never been sufficiently extended. Such tests are much more tedious and exacting in interpreting these findings than those directed to the more obvious skin and mouth conditions. Lack of riboflavine is no doubt an important causal factor, but other vitamins



(a) (b)

Fig. 2—Same case as fig. 1: rashes on flexor aspects of (a) arm, and (b) leg, on first attendance.

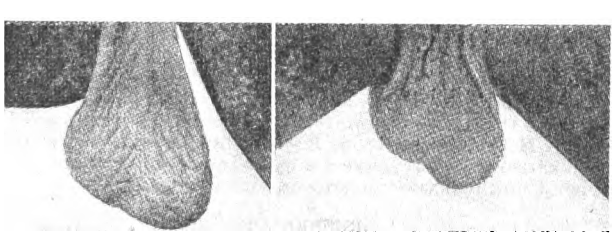
of the B complex, excluding thiamine, may also share in the cause, a view that has also been expressed by Stannus. The same is partly true for nicotinic acid, though there is more evidence that lack of this vitamin is not directly concerned. Experiences in P.O.W. camps appear also to support this view.

Therapeutic investigation, therefore, by exclusion trials has reached a definite but only intermediate stage. Treatment has yielded important results, provided it is begun early, the dosage (marmite or brewers' yeast) is high, and it is maintained over a long period.

Clinical survey is important, for there are distinct variations and superimposed conditions to be found. Keratitis was rare in Nigeria, but common in Sierra Leone and apparently in P.O.W. camps. The Jamaican cases were fulminating. Beriberi is rare in Nigeria but common among ships' crews, on a diet of rice and salt fish, from Sierra Leone and Liberia.

A study of the various diets is a great assistance to the clinical diagnosis. In Nigeria retrobulbar neuritis was extremely common but in certain areas only, or under bad conditions which existed in some schools, chiefly boarding-schools, before the war. It was not seen in Nigeria or in those areas where yams or sweet potatoes or better-class cereals formed the staple carbohydrate. As early as 1933 I became convinced that manioc was the food cause, for the disease was essentially confined to the manioc-eaters. This view has been strongly upheld by Clark (1932, 1936), with the cyanogenetic theory, and his work might still be followed with advantage.

But in Jamaica manioc was replaced by sugarcane, in Sierra Leone and Spain (civil-war conditions) largely by rice, and in China and the Far East by rice. Where the rice was unpolished, or, as in P.O.W. camps, reinforced with barley and soya bean, there was least evidence of



(a) (b)

Fig. 3—Same case as fig. 1: condition of scrotum and thighs (a) on first attendance, (b) after eleven days' treatment.

retrobulbar neuritis. A theory based on an exogenous toxin, therefore, can only be upheld if it can be proved to be common to all conditions. The theory of "spoiled rice" seems then to rest on rather slender grounds. There is an obvious alternative explanation—a theory based on an endogenous breakdown, as has been supported by Stannus (1940). It may be that certain foodstuffs do

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possess inhibitory toxic factors and also help to accelerate metabolic breakdown (e.g., cyanogenetic factors; alcohol in secondary pellagra).

What has been established is that under conditions of duress or environmental restrictions, leading to an insufficiency in normal intake of protein and, to satisfy hunger, a relative overconsumption of energy foodstuffs poor not merely in vitamin B_1 but in all the B vitamins, nutritional retrobulbar neuritis has become common. Other syndromes may of course coexist, such as beriberi. And why say that rice can cause only beriberi, since in the light of our newer knowledge of the biochemistry of foodstuffs it is poor in all nutrients? (Moore 1942.)

It seems, then, that further and more exhaustive inquiries into the various diets on the lines of those which have already clarified some issues would be rich in results. The dietary records kept in the Far East will undoubtedly prove of extreme value.

PROPHYLAXIS

How do these conclusions affect the question of prevention? The fact that Europeans in the siege of Madrid and in the Far East have suffered from a nutritional eye defect has aroused world-wide interest, and rightly so; but this is only one aspect of the picture.

It is known that, both in war and in peace, very many coloured people must be affected by one or other of these conditions. The world is now faced with acute famine, and naturally all that is possible is being done to meet this crisis. But it is certain that, where there is a gross dietary imbalance, and where carbohydrate foods of the type indicated above are almost the sole source of energy, and protein is deficient, then we can be certain that this visual complaint and the associated primary deficiency states must remain. It is not enough to ensure an adequate crop of rice or manioc; we must also aim at a vast improvement in the variety of carbohydrate foods and of the diet as a whole and a rise in the economic standards of life. It has been ably argued that food yeast may prove a partial salvation. I believe that this must be only a temporary expedient. Perhaps these further experiences and the knowledge gained from them will do more than extend research by drawing attention to a condition or conditions which in time of peace ought to be completely or at least largely avoided.

ADDENDUM

Any survey of earlier work would be necessarily incomplete without reference to the following, recorded in Leitch's *Dietetics in Warm Climates*: "Winterbottom (1796), Physician to the Colony of Sierra Leone, drew attention to the observation by Bontius that among Javanese and Malays weakness of sight, said to be caused by rice, is removed by a better diet." Also to "Robert Clarke (1841), Surgeon to the Colony of Sierra Leone, who described 'ophthalmia and paralytic complaints with chronic inflammation of the mouth' in the prison, and the diet was said to be 'one quart of rice and a quarter of a gill of salt per day.'"

Also the account referred to by H. H. Scott (1918) of H. H. Strachan (1888, 1897) (who, though he believed the cause malarial, gave a most observant account of his visual findings and the sore-mouth syndrome).

REFERENCES

Calhoun, F. P. (1918) *Amer. J. Ophthal.* **1**, 834.
Carroll, F. D. (1936) *Arch. Ophthal.* **16**, 919.
Clark, A. (1932) *Trans. R. Soc. trop. Med. Hyg.* **26**, 301.
— (1936) *J. trop. Med. (Hyg.)* **39**, 269.
Dansey-Browning, G. C. (1946) *Brit. med. J.* i, 288.
— Rich, W. M. (1946) *Ibid*, p. 20.
Garcia, J. (1940) see *Trop. Dis. Bull.* **38**, 401.
Garland, H. G. (1946) *Brit. med. J.* i, 143.
Hughes, W. (1946) *Lancet*, i, 569.
Kruse, H. D., Sydenstricker, V. P., Sebrell, W. H., Cleckley, H. M. (1940) *Publ. Hlth Rep., Wash.* **55**, 157.
Landor, J. V., Pallister, R. A. (1935) *Trans. R. Soc. trop. Med. Hyg.* **29**, 121.
Meagher, J. L. (1936) *Ibid*, **30**, 251.

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MEDICAL EDUCATION IN QUEENSLAND

FROM OUR AUSTRALIAN CORRESPONDENT

A REVIEW of medical training at the University of Queensland has resulted in a new curriculum which will come into operation in 1947. The course will last six years, the academic part occupying five years, and the final year being spent in attendance or residence at an approved hospital. The final examinations will be held at the end of the sixth year.

The objectives of the curriculum are:

In the practice of general medicine and surgery *specialism should be carefully avoided.*

Development of intelligence, initiative, and judgment.—It is an anachronism for a student on graduation to rely on such facts as he has managed to memorise, without having the ability to think and act for himself. Scientific direction must replace empiricism.

Training in acceptance of professional responsibilities.—Graduates must have the faculty of judgment developed by their medical training.

Training in moral responsibility.—The spirit of the Hippocratic oath is much more necessary today than it was in the mystic era which saw its birth.

A balanced education.—Equilibrium must be achieved in the face of clamour for the good practical man on the one hand, and a lament for the passing of the classical education on the other. The changing nature of this equilibrium should be recognised, and changes made gradually.

Promotion of student health.—The practitioner of medicine must be an apostle of health, and positive health practices would have an educational as well as a physical value.

Training in citizenship.—The relationship between the practitioner and the community is an essential aspect of medical practice.

A teacher, as well as having a sound knowledge, should be able to inspire the student with a love of learning in general and of his own subject in particular; he should have a positive character, high in moral principles; he should have, or should develop, the art of teaching; and he should be critical of himself and have a balanced outlook. The teacher's main responsibilities should be:

To make facts available in convenient form.—By appropriate stages, education in the true sense must be substituted for teaching in the narrow sense.

To train students in judgment upon facts.—Facts are mainly valuable for the enrichment of concept. The battle-training of judgment should replace much of the squad drill of facts.

To train students in the application of theory to practice.—Practical demonstration is preferable to didactic instruction.

To train students in manual skill.—Delight in performance is a necessary attitude of mind prerequisite to the development of manual skill.

To encourage the development of character and a wide education.

To correlate subjects with one another.—Each subject must be linked with what went before, what is coming after, and what is being taught at the same time.

For the matriculation, English, physics, chemistry, mathematics, and one language are essential. In the first year much of the general physics and chemistry will be

References continued

Moore, D. G. F. (1930) *W. Afr. med. J.* **3**, 46.
— (1932) *Ibid*, **6**, 28.
— (1937) *Lancet*, i, 1225.
— (1939) *J. trop. Med. Hyg.* **13**, 109.
— (1942) *Ibid*, **45**, 129.
Nutrition Society (1946) see *Lancet*, June 8, p. 852.
Rich, W. M. (1946) *Brit. med. J.* i, 330.
Ridley, H. (1945) *Brit. J. Ophthal.* **29**, 613.
Scott, H. H. (1918) *Ann. trop. Med. Parasit.* **12**, 109.
Sebrell, W. H., Butler, R. E. (1938) *Publ. Hlth Rep., Wash.* **53**, 2282.
Spillane, J. D. (1945) *Lancet*, ii, 317.
— Scott, G. I. (1945) *Ibid*, p. 261.
Stannus, H. S. (1911) *Trans. R. Soc. trop. Med. Hyg.* **5**, 112.
— (1940) *Lancet*, i, 351.
— (1944) *Brit. med. J.* ii, 103 and 140.
Sydenstricker, V. P., Geeslin, L. E., Templeton, C. M., Weaver, J. W. (1939) *J. Amer. med. Ass.* **113**, 1697.
Wilkinson, P. B., King, A. (1944) *Lancet*, i, 528.
Williamson, A. D. (1946) *Brit. med. J.* i, 545.
Wright, E. J. (1928) *W. Afr. med. J.* **2**, 127.
— (1930) The A and B Avitaminosis of Sierra Leone (privately printed).
Wright, R. E. (1946) *Brit. med. J.* i, 546.

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omitted. Physics will be restricted to a revision and unification of the matriculation standard and the study of the physical phenomena important to the understanding, investigation, and control of living material. Chemistry similarly will be revised and unified up to matriculation standard, and will provide the fundamentals of physical and organic chemistry necessary for the understanding of physiology. The first year will include general biology, comparative anatomy, general human anatomy, developmental anatomy and histology, and medical zoology. The second year will cover regional, systematic, and developmental anatomy, systematic physiology, integrative physiology, and neurology. The third year will deal with clinical anatomy and physiology, general and special pathology, pharmacology, normal psychology, clinical methods, materia medica and pharmacy, bacteriology, and hæmatology. The fourth year will cover systematic medicine and surgery, social medicine, and obstetrics. In the fifth year the students will work in clinical groups, and will also study and practise clinical anatomy and pathology, surgical pathology, and social medicine. The special subjects will be allotted only two hours per week. Two weeks' full time must be spent in residence at an obstetric hospital. In the sixth year ten weeks' residence will be undertaken in (i) a surgical and (ii) a medical division of a general hospital; (iii) a women's hospital; and (iv) a children's hospital.

Students should be initially selected on the grounds of character and physical standard as well as by examination. During the course, a third of the marks should be allotted for work done during the year as shown by practical work, seminars, and quiz classes. Greater importance should be attached to knowledge of principles and their application than to memorised facts. Manual ability should be considered in the assessment of qualification.

In the preparation of this curriculum much valuable guidance was derived from the report of the Royal College of Physicians of London. The Goodenough report, which appeared after the curriculum was formulated, was a helpful reinforcement in securing administrative approval.

RESEARCH ON AGEING

CONFERENCE IN LONDON

ON July 16 a conference was held in London by the British branch of the Club for Research on Ageing. The meeting was attended by delegates of the European branches and by other guests interested in the subject. Lord Nuffield was elected hon. president of the conference, and Sir Francis Fraser chairman.

Sir FRANCIS FRASER described the rôle of clinical research on old age. This, he said, was the most difficult of all fields of research, since there were always so many uncontrolled factors. Quick results were not to be expected; one must think in terms of long-continued and laborious research. Pathological conditions were generally present in addition to old age, and it was difficult to differentiate between them. He concluded that clinical research on physiological ageing was practically impossible, and it was better for clinicians to concentrate on studying primarily the pathological conditions.

SCOPE OF THE PROBLEM

Prof. F. A. E. CREW, F.R.S., gave an account of recent work in Scotland on the sociological problems of an ageing population. The current figures for births, deaths, and marriages appeared satisfactory on the surface, but when examined more carefully the present population trend showed a most disquieting increase in the proportion over 65 years of age. Since industrial capacity diminished after 35 there was a danger of the old becoming a burden on the younger members of the community. He emphasised the need for closer collaboration between clinical investigators and those working on population research. The real problem of gerontology was "not how to give years to life, but life to years."

Dr. MACDONALD CRITCHLEY called for further research on the nervous system in normal ageing as well as the associated pathological conditions; he described a number of possible schemes of research in neurogerontology.

Dr. V. KORENCHEVSKY defined the aim of gerontology as not merely to achieve a longer life but also a stronger one. Since ageing starts at a very early age, the whole life-span, and even the development of the fœtus, must be studied. Attempts at rejuvenation by such methods as Voronoff's glandular grafts, hormones, or Bogomoletz's serum had proved unsatisfactory, since they achieved only temporary stimulation; the aim must be to discover and remove the causes of premature ageing and not to stimulate degenerated tissues. He outlined five conditions required for international and local organisation of research on ageing.

Prof. F. C. BARTLETT, F.R.S., considered that the effects of ageing on performance could be compared with the effects of other factors, such as extremes of heat, humidity, and noise. Each of these factors produced an increased liability to fatigue, which could be measured in a number of ways. New methods developed during the war for the study of skill and fatigue in air pilots might be applicable.

Prof. G. R. CAMERON, F.R.S., emphasised the need for quantitative research on the effects of ageing on the blood-vessels of the brain: there was scope for the employment of many new techniques. Lord NUFFIELD said he could not understand how ageing could begin in early childhood, since the athletic performance of a child went on improving up to the age of 15. Dr. KORENCHEVSKY and Mr. JOHN HAMMOND, F.R.S., pointed out that different organs developed at different ages: brain and bone had priority at an early age and muscle developed only later. Prof. M. J. STEWART wanted research to be carried out on blood changes in old age; it was striking that many old people died of pneumonia because their blood failed to respond as vigorously as that of young people to the toxins of the pneumococcus.

IMPORTANCE OF STATISTICS

Dr. DEREK RICHTER urged the need for more accurate statistics on causes of death. The present figures were unreliable as permission for a necropsy was often refused. The public must be educated to realise the importance and value of post-mortem examinations. The development of gerontology as a science could be seen in the two editions of Cowdry's book on ageing. The first edition was made up largely of speculation and poetry; the second contained less poetry and more facts, figures, tables, and measurements. Clinical science could help by providing greater precision in the measurement of the factors concerned.

Dr. LETITIA FAIRFIELD deplored the way in which the chronic sick and aged were despised by the teaching hospitals and thrust on the public authorities. Medical science had relieved many of the worst miseries of old age, such as bladder and prostate troubles; but senile dementia was a social problem of increasing urgency. Was it right that healthy young women, who should be bringing up children in their own homes, were now engaged in washing dirty linen in wards filled with wet and dirty senile dements?

The guests from Sweden, Denmark, Holland, and France reviewed the work on ageing that was in progress in their respective countries. Dr. W. B. PURCHASE, speaking as a coroner, agreed that the present statistics were unreliable, and said he could provide each year reliable figures for some two thousand cases on which necropsies were carried out. Professor CREW said he was anxious to close with Dr. Purchase's offer. Dr. FAIRFIELD considered that the conspiracy among general practitioners to avoid putting cancer on death certificates might be sufficient to result in a significant statistical error.

The morning session was concluded by the passing of five resolutions, proposed by Dr. KORENCHEVSKY, expressing the views of the conference on the requirements for the rapid advance of gerontology. These included international coöperation, for which purpose the club was founded; establishment of permanent institutes for research on ageing; and the provision of ample funds to secure these facilities.

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SEX HORMONES AND AGEING

At the afternoon session Mr. P. WILLIAMS, D.SC., read a paper for Prof. E. C. DODDS, F.R.S., on the significance of androgen and œstrogen excretion in the urine in relation to ageing. The tendency to cancer of the prostate was considerably affected by the sex-hormone balance as shown by experiments on castration and by the effects of administering stilbœstrol in the male. There was a need for further quantitative data on all age-groups.

Professor CREW pointed out that the male infant had a much poorer chance of survival than the female. A male infant with bronchopneumonia was thus suffering from two conditions: (1) bronchopneumonia and (2) maleness. Could we use sex-hormone preparations to transform temporarily a male infant into a female to get over this disadvantage?

Mr. HAMMOND described recent work at Cambridge on the ageing of the fœtus in rabbits and sheep. The chronological age must be differentiated from the physiological age, as measured by the size, the ossification of the bones, and development of the heat-regulating centres. The physiological ageing of the fœtus could be varied experimentally by controlling the size of the litter and the nutrition of the mother. He suggested that similar factors might operate in the return to an infantile condition in old age.

Prof. J. B. DUGUID put forward a new theory of the thickening of arteries in atherosclerosis. He felt that we had been misled by the teachings of Virchow. The thickening did not come from within the artery walls; it was due to the organisation of successive layers of fibrin deposited on the intima. The difference was fundamental, since the primary cause of the disease was in the blood rather than in the vessels. Professor CAMERON asked how this concept could account for lipoids in atheromatous plaques. If the arterial narrowing was due to encrustation with fibrin from without, why did not the veins get narrowed in the same way? Professor DUGUID felt the relation of lipoid changes to atheroma was not fully understood. The veins did not get narrowed because, when they were thrombosed, the whole vein became blocked, whereas in an artery the vessel was cleared by the rapid flow of the blood.

Dr. KORENCHEVSKY gave an account of experiments on the artificial premature "climacteric," its effects on the process of ageing in female rats, and the influence on this process of androgenic, œstrogenic, and thyroid hormones. Ovariectomy hastened ageing of rats. The combination of androgenic, œstrogenic, and thyroid hormones produced an apparent "anti-ageing" effect, as judged by the weight and histological appearances of some vital organs; but this might be merely a temporary stimulation of ageing organs. Prolonged treatment might be followed by collapse, since the stimulants did not remove the causes of ageing.

PSYCHOLOGICAL FINDINGS

Dr. W. STEPHENSON read a paper for Dr. P. E. VERNON on the effects of vitamins on the mental state of senile patients at Tooting Bec Hospital. It was concluded that large amounts of vitamins exerted little effect on psychological ageing when the diet contained sufficient of these compounds. Dr. Stephenson described also some work of his own in which addition of vitamins to a diet previously deficient in these substances had been followed by improvement in the mental capacity of senile subjects. Professor BARTLETT criticised the use of psychometric tests in these experiments; he held that the performance of such a test was not characteristic of senile subjects. It would be better to measure the kind of things that old people normally enjoyed doing.

Dr. RICHTER described an investigation on the biochemical changes in ageing. The results indicated that the mental and the physical deterioration of ageing were different processes that could be defined by their biochemical accompaniments. In advanced physical senility there were blood changes which were distinct from the changes normally occurring in old age; the changes associated with senile dementia were different again. Senility was not a simple entity, but was made up of a series of pathological processes, which should be more clearly defined by further work. Ignorance of the biochemical changes in the tissues of the ageing left a big gap in the knowledge of the subject. Much public money was now being spent on palliative measures, such as homes for old people: there was an urgent need for the allocation of more money to preventive measures, which meant research.

Dr. J. H. SMYLY gave an account of the methods developed by him for assessing physical fitness in old men. These included exercise-tolerance tests, as measured by pulse-rate and oxygen consumption. The usual methods might be dangerous for old people.

Professor CREW, in summing up, said that the proportion of old people in the population was increasing, and gerontology was therefore a science of growing social importance. Geriatrics must also come to occupy a place in medicine not less important than that of pædiatrics today. He recommended the formation of a permanent international congress committee, to organise international gerontological congresses.

CANADIAN MEDICAL ASSOCIATION'S MEETING

FROM OUR CANADIAN CORRESPONDENT

THE 77th annual meeting of the association was held in Banff, Alberta, from June 10 to 15. The British Columbia branch sponsored the convention, but the Vancouver hotels were already full; so the choice fell on Banff, with its great C.P.R. hotel capable of taking a thousand guests, and another large hotel 40 miles away at Lake Louise. Every guest-house and motor camp in the neighbourhood was prepared for those who could not be cared for by the hotels.

No fewer than 889 doctors registered, but only 3 guests came from Great Britain—Sir Stewart Duke-Elder, Sir Leonard Parsons (who gave the Blackader lecture on pædiatrics), and Dr. Donald Paterson. We hope that the account they will give may encourage their colleagues at home to visit the Canadian Medical Association the next time it holds its annual meeting in the West.

At the ceremonial evening Dr. Wallace Wilson (Vancouver) was installed as the new president. The next morning brought the valedictory address of the retiring president, Dr. Gérin Lajoie, of Montreal; with national unity in social and scientific endeavour as its theme, this was Gallic oratory at its best.

The exhibition of works of art by members of the association was visited by everybody. The prize for a painting in oils went to Dr. R. C. Riley, a pathologist from Calgary; the prize was a bas-relief portrait of the late Sir Frederick Banting. The photographic section included the work of a score of experts, all of whom are in practice.

Everybody had a chance to see mountains and the lakes away up near the snow line. The time was too early for the poppies, but the glacier and the snow-capped mountains made a perfect setting for the cold blue jewel of Lake Louise. Lake Moraine is several hundred feet higher than Louise, and the road skirts the mountains, with towering peaks on one side and a fearsome precipice on the other; from it, the "ten peaks" came into perfect view. Nearer town was the ski-run. Only skilled and pioneer experts are allowed to use it in the winter; they climb for five hours and come down in seventy seconds.

The great mass of Mt. Eisenhower was seen best from the train, but came into view among the other peaks as the road spiralled upwards. The Albertans have not entirely discarded its old name of Castle Mountain but combine it in its new identity by referring to "Castle Eisenhower," which perhaps enhances Canada's compliment to the generalissimo. There may be more splendid scenery in the world, but medical conventions are not usual in national parks a mile above sea-level, with a regiment of rocky snow-clad mountain peaks arrayed against the skyline.

"... The idea that the scientific and inventive mind is necessarily antagonistic to the merciful heart is as degrading to knowledge as it is untrue of the virtue of goodness. The gap between application of the two qualities is due to the selfish sides of human nature, and not to the increased power and supplies which knowledge provides for the primary needs of life."—Sir RICHARD GREGORY, F.R.S., *Nature*, Aug. 3, p. 151.

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Medicine and the Law

Pensions Appeals

CONTROVERSY over the Serviceman's right to a pension continues. Parliament may evolve a formula, but the two sides naturally attach most emphasis to those words which best favour their own interpretation. The Serviceman presses for the logical principle that, if the State found him "fit to serve," his subsequent disabilities must make him "fit for pension." The Ministry of Pensions declares that it cannot accept this principle and has no power to go outside the royal warrant which governs the grant of pensions. Questions in Parliament have made us familiar with the case of a man who, for instance, has his leg amputated while serving in the Forces but is refused pension on the ground that the disease from which he is suffering is not attributable to, nor aggravated by, war service. The Ministry has to prove beyond reasonable doubt that the Service conditions played no part in producing the disease; if it fails to discharge this onus, the pension must be paid.

To some interesting judgments delivered by Mr. Justice Denning in English litigation we must add the comments of the Court of Session in Edinburgh during a Scottish appeal decided on July 19. The Ministry, it seems, had been relying on the fact that the claimant had a predisposition to the disease or an inherent constitutional tendency thereto. The Scottish court made light of predisposition. It only meant, said Lord Cooper, that, if the patient were exposed to the conditions, known or unknown, the disease would find in his constitution congenial soil in which to develop. The court was "unable to see the relevance of such a consideration"—surely a triumph of judicial detachment. Then followed a curious observation. Lord Cooper took note that, in three out of the sixteen pensions appeals before the court, the legal chairman had been in the minority on the issue whether the Minister had discharged beyond reasonable doubt the onus resting upon him. The pensions appeal tribunal is competent to decide by a majority, but "it appears to the court that, when the question is the sufficiency of evidence to discharge such an onus, and when express injunction has been laid upon the tribunal to give the claimant the benefit of any reasonable doubt, only powerful considerations could justify the medical and Service members in outvoting the legal chairman." The opinions of learned judges are entitled to the greatest respect, but this obiter dictum cannot be accepted without protest. Parliament has constituted a pensions appeal tribunal consisting of a legal, a medical, and a Service member, with the legal member acting as chairman. The courts really must not construe the enactment as meaning a tribunal of one legal member with two assessors.

Meanwhile the Minister of Pensions has had to consider the situation arising out of the recent judgments. He informed the House of Commons on July 25 that, to remove any sense of injustice, he was prepared to receive applications from claimants whose appeals had been disallowed by a tribunal before the end of July and who were of opinion that their claims would have succeeded if the tribunal had happened to consider them after the courts had expressed the views now promulgated. The Ministry will examine the applications. If satisfied that the case is covered by the recent judgments, it will pay the pension at once. If it thinks the claim should still be rejected, the applicant will be able to take his case before a new special arbitration tribunal outside the framework of the Pensions Appeal Tribunal Act. The decisions of this new type of super-tribunal must be accepted as final. Its constitution will be similar to that of the existing statutory tribunal. It is hard to see what more the Ministry could have done in the difficulties which have arisen.

In England Now

A Running Commentary by Peripatetic Correspondents

FOR fifty-one weeks in the year I am, as a medical officer of health, a man of moderate dignity. During the remaining week I attend a conference, accompanied by the chairman and one or two members of the committee which controls the health activities of my urban community, and for several dreadful days become the slave of circumstance, a mere puppet at the call of those in authority. There is no escape. I live with them in the same hotel; we go together to the conference; when they get bored with the speakers I join them for a coffee, or, if we are lucky, a beer.

This personal grouse is, of course, of no general importance; but when one considers the situation multiplied by the scores of other medical officers in the same kind of predicament, an element of pathos creeps into the picture. For instance, I see another medical officer, an old colleague whose friendship I value. "Hullo, Frank," I shout. He smiles and signals cryptically. I understand; and we pass on; for he, too, has his chairman; he, too, is for one week in the year a miserable flunky.

This is the tragedy of mixed conferences, the eternal polarity of oil and water, the east and west which never meet unless in the neutrality of mediocrity. It may well be that when doctors get together they talk shop; but from their intellectual and social contacts is born a great deal of good. Here is gained a refreshment of mind; here is found a new peace because one hears of another's difficulties; here is added the needed strength to return to homely problems with a fresh hopefulness. But this promised land of a conference is always marred by the different kinds of pilgrims who yearly congregate under the banner of health: professional officials with their committee members; local-authority vassals with their lords and masters.

I find it difficult to suggest a solution. Undoubtedly the dancers and those who pipe the tune must meet at times on common ground; but let the intercourse be sweetened by brevity. I am now wondering if this personal experience of a health conference is a grim presage of things to come, when we are all public servants with personalities rounded off by the emery-wheel of officialdom and lay control. I hope that as doctors we shall ever maintain a pride in our own professional culture; that in our necessary concourse with the controlling representatives of the public and the State we shall never lose the sense of our high calling; and that, however they may judge us, we shall preserve our freedom to think well of ourselves and be worthy of the thought that inspires.

* * *

You probably don't realise what an organisation lies behind taking the Girls' Club to the Tower of London. First of all my wife had to discover the fare and the time taken on the journey so that their mothers could be told what time they would be home. Then a detailed reconnaissance had to be made, so that at any point on the way we could direct them to the nearest lavatory (small girls seem to have so much less initiative in these matters than small boys). My job was more localised—to find out the cost of admission, the best time to go, and the possibilities of a guide. The warder I spoke to was extremely helpful and obviously an artist. He anxiously inquired their ages, and was pleased that they were about fourteen. "That's the best age," he said. "They're young enough to be enthusiastic and not too young to Understand the Tower." The nearest Lyons had to be approached with a request for large-scale tea; we know from previous unhappy experience that some softening-up is necessary before invasion. A letter had to be sent to the Governor to book a guide. It had to be explained to the girls that meeting at two-fifteen meant that no lunch need be brought and that no letters of permission from their mothers were needed. No, nor pyjamas. Yes, you may bring sweets.

The journey by underground was uneventful—by club standards. The doors were unfortunately hand-operated, but nobody fell out irretrievably. The more sophisticated ones whistled at the men on the platform and the agile types swung up and down the carriage on the straps. Edie stood on one leg in an attempt to master

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the rocking of the train and naturally fell flat on her face. Fourteen-year-old Doreen surveyed the prostrate thirteen-year-old at her feet with great distaste and said to the carriage in general: "They do show you up, don't they?" Later, Doreen began to auction a 'Kirbigrip' but the bidding had only reached two slides and a toffee when we had to get out.

At the gate we demanded a guide and the warder asked if we had a paper. Edie timidly offered him a "True Romances" and was gently waved aside. How do they choose the warders? It says in the catalogue that they are chosen from "the most deserving N.C.O.'s in the Army," but surely they have a voice test as well? And are they trained to throw their cloaks open with such nonchalance, or is that also an inborn ability? Our man handed out murders, executions, escapes, dates, kings, queens, ghost-stories, and facts with great charm and assurance, and there were soon several dozen people round us. For good measure he added odd facts about the history of London and mentioned Smithfield, where "people were burnt for any form of religion."

We were left to inspect the White, Beauchamp, and Bloody towers by ourselves, having been warned not to miss the inscriptions carved by "hapless prisoners." Soon after this I saw Rose gazing in sympathetic horror at the pencilled signature of John West, Boston, Mass. They liked the armour and felt sorry for the horses. "Is that a real body?" "Oh, Sylvie, you are *silly*." "Oh look! There's some armour in Technicolor." Doreen was fascinated by the block and axe: "I bet it feels funny." When we collected them outside there were three missing, inevitably. Equally inevitably, one of them was Edie. I found them listening in rapt attention to a warder who was giving them a private talk on the nicer points of armoury. He apologised sheepishly when I arrived, but I left them to it.

Edie was very quiet on the way home. I think she was Anne Boleyn on the way to the scaffold.

* * *

When I volunteered to help with the bottling of fruit, little did I realise how much of a busman's holiday it was going to be. How like the sterilising-room is the kitchen during these episodes, with the oven as the autoclave and the kettle as the steriliser. The fruit goes into the bottles like the swabs into the drums, and the bottles are scalded just as bowls are flamed. Our womenfolk are little behind us in using the aseptic technique.

The principle is simple. The fruit is sterilised by spending an hour in the oven; and then, after boiling water has been added to the top and running over, the bottle is sealed with a rubber washer and a glass top. As the bottle cools, the cap is sucked on, and a vacuum is formed, excluding all bacteria until the day for opening arrives. This cooling-time is the critical one of the whole process, for a faulty cap will let in air and all the vacuum is lost. It cannot be hurried and at least twelve hours must pass before testing. What hours of anxiety must have been spent in the past!

Now this is where I claim to have made an important advance in technique. By one simple step, within fifteen minutes of sealing, the offending bottles can be picked out, refilled, and resealed. Auscultation of the bottles is the secret. As the air sneaks in it makes a most delightful sibilant hiss that is quite distinctive through the stethoscope. One cannot miss it, and with perfect confidence and an authoritative air one can diagnose the successes from the failures.

Any man can do the unskilled task of topping and tailing gooseberries, but we in the medical profession can rise above that. Auscultation is a specialised game, and who is better qualified to do it than the doctor's wife's husband?

* * *

As deputy public vaccinator enacting the instructions in the fourth schedule I feel as one would who was caught by one foot in the fourth dimension. The fees are paid over the top of the bureau eventually, but it never works out as planned in Form G.P.H.5. The mental ardour I put into computing the payment in 17 different categories is, as I know from R.A.F. experience, worthy of a Pathfinder navigator. I waste precious minutes wondering why the vaccination of a child who, five days after the puncture, was transferred to an unknown address 300 miles away should be worth 4*s*. 2*d*. when a Successful Vacc. is worth 6*s*. 0*d*. and an Unsuccessful Vacc. (Patient's House, First Person) is worth nothing; two visits are made in each case and the burnt petrol smells the same.

The mileage calculation that is just three-dimensional in this hilly practice is a fantastic mystery on four-dimensional paper. The Register, which would be a smiling delight to any totalisator clerk, is often a joy to me because I am fond of the obsessional neatness of ruled foolscap, and the thing makes a good backrest in the old car. It is a strongly bound volume, proof against moodiness and the constant page-turning that invokes transient nystagmus and my visual aura (migrainous). In spite of the great help that the Register often gives, Form G.P.H.5 is seldom completed, but is always "duly" returned with the Register, my good wishes, and some of my wife's secret hoard of brown paper to keep the rain off. From then on there is the future vista of forms noting refusal, demand, success, failure, vacillation, frustration, indisposition, and insusceptibility in the child of X, &c. How easy it all was when they all lined up "with the 'and hon the 'ip"! How successful it all was! So now I wonder if, perhaps, 6*s*. 0*d*. is the price of skill and the forfeit for honesty.

As I turn over the pages of an old dusty Vacc. Register I read with envy the record of a predecessor who never had a failure in years.

* * *

Regimentation, and yet more regimentation. That seems to be the order of the day. Thousands of little prefab. huts in orderly rows. The same kind of loaf for everybody. Now dress. Utility clothes began it, but now we are all going to wear the same colour, men and women. Not a bad idea. I've seen it on a small scale in India; only there the uniformity was limited to villages or small districts. At Palam, near Delhi, nearly all the women wear clothes of the same dark red. Near Madras they (the women again) all wear the same purple hue. The spectrum is geographical. It is a lucky thing that the present political colour in England is a vivid socialist red. We won't look so drab, after all. At least that's what I thought when my morning paper informed me on August 1 that the red clothing coupons were now valid.

* * *

"I've just been reading in the paper about a man who gave his wife a mink coat; now, that never happens to me." "And I've just been reading in the paper about a man who gave his wife a pair of black eyes," retorted her husband, "and that doesn't happen to you either."

I was moved to a recollection of that vignette of domestic felicity by the recent review of a popular work by a versatile surgeon whose nom-de-plume provides me with no clue to his identity. His practice is the world of drama or perhaps even melodrama; his patients provide a circumambiency of sensationalism. A mother sacrifices a cornea to replace the scarred membrane of her child. The right arm of a famous violinist, who would have preferred death to the loss of this limb, so shattered as to be scarcely recognisable as an arm, is preserved so that its owner may be restored to his life of music. The manufacture of an artificial larynx results in the production of a deep musical voice, though the subject of this triumph was unfortunately a foreman in a radio factory and not a celebrated tenor. In the humdrum surroundings of a store, a shopkeeper, the victim of a malignant growth, lived in a world peopled by Shakespeare's characters. His poetical utterances impressed the surgeon with the importance of saving his life. No wonder the enthusiastic reviewer refers to "the revelations of modern surgery where skill of hand is sometimes controlled by the heart as well as by the brain." And so I pondered. Why don't these things ever happen to me?

None of us are immune to the practice of day-dreaming. Just as the kitchen-drudge and the hack-clerk seek refuge at the pictures from prosaic occupations and project themselves into romance, so I, in my humble world of medicine, conjure up visions of situations and episodes of which I am the hero—of performing operations within the capacity of at most three men in the profession; of brilliant diagnoses elucidating problems which have baffled my most eminent colleagues; of preserving the lives of public characters of world-shaking importance. Yet about the most exciting experience most of us encounter is a conviction for exceeding the speed limit or riding a bicycle without a light.

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Letters to the Editor

RELEASE OF SPECIALISTS

SIR,—Once more Sir Ernest Graham-Little has proved himself the champion of the Services medical officer in asking the Secretary of State for War whether he was aware of the wastage of specialist man-power in the Forces, in particular of orthopædic and surgical specialists (*Lancet*, Aug. 10, p. 217).

Mr. J. J. Lawson's reply that he was not aware of any wastage of specialists in the Army will strain the credulity of quite a proportion of surgical specialists at present serving. To meet surgical specialists who are "supernumerary to establishment" or are "attached to a command specialist pool" is not uncommon; those so placed are not necessarily employed in their specialty and, as often as not, are employed as general-duty officers, performing such duties, in the majority of cases—let it redound to their credit—with a good will.

The Army is rapidly becoming a "younger army," and the proportion of young conscripts and recruits is increasing. For this reason surgical procedures are less frequently indicated and are mostly confined to the repair of hernia (admittedly never lightly to be undertaken) and to the treatment of varicose veins and of hydrocele. The remainder comprise minor surgical procedures well within the experience of a graduate of 2–3 years' standing. Army surgical practice is distinctly limited in its scope, for several reasons: in the first place, it is predominantly directed towards the male; secondly, the Army comprises a section of the population in which surgical emergencies are bound to be relatively infrequent; thirdly, most surgical procedures practised today are of the type already described—surely a surgeon's scope should be wider than this even in these days of specialism; and fourthly, owing to the examination of the conscript and recruit by a medical board whose standards are now higher, the men at present entering the Army are, in the main, healthy.

Mr. Lawson's contention that he is not prepared to single out *Army-trained specialists* (my italics) for early release as it would break down the basis of release by age-and-service group priority does not bear examination. In the R.A.M.C. alone, general-duty officers have been released in groups at least ten in advance of specialists and therefore the Secretary of State for War would not be creating a precedent by "singling out" Army-trained specialists for early release. The basis has already been broken. Does this statement then suggest that he is prepared to single out for release *fully qualified* specialists?

Only two days ago, the *Times* (Aug. 8, p. 2) published the releases from the Forces for the period Oct. 1–Dec. 31, 1946, announced by the Minister of Labour and National Service in which the officer releases from the Army for that period consist of age-and-service groups 40–46. Can the Secretary of State for War maintain that the basis of release by age-and-service group priority has not been violated, when the declared releases for R.A.M.C. specialists by Sept. 30, 1946, consist of groups up to and including group 35? At the time of writing, no policy for the release of specialists beyond group 35 has yet been declared by the War Office, although the Central Medical War Committee in reply (Aug. 7) to a request for information on this matter have kindly ascertained that "it *is hoped* (my italics) that the release programme for the period Oct. 1–Dec. 31 will be published within the next few days."

W. R. BLACK
Major R.A.M.C.

TREATMENT OF MENINGITIS

SIR,—The most retrograde step in therapy since the introduction of penicillin has surely been its use intrathecally in cases of nontraumatic meningitis. It is salutary, therefore, to learn from the article by Sir Hugh Cairns and his colleagues (Aug. 3) that streptomycin used intrathecally was largely ineffective and caused a high incidence of unfavourable reactions. When streptomycin becomes available in this country its systemic use will be of the greatest value; may its intrathecal use be confined to those traumatic cases rightly under the care of the neurosurgeons.

There was a time when we treated meningitis in children by repeated punctures—lumbar, cisternal, and (in infants) ventricular—injecting antimeningococcal serum and washing it through. If the child recovered it was felt that a great therapeutic victory had been won. However, it was later found that just as good results were obtained if the theca was left severely alone after doing a single lumbar puncture for diagnostic purposes and giving large doses of antiserum intravenously and intramuscularly. With the advent of the sulphonamides this impression was strengthened and confirmed. Full doses of a sulphonamide, sedation, hypertonic rectal salines, and quiet, produced the best results.

With the advent of penicillin, intrathecal therapy has come into fashion again. I believe that any case which has recovered after intrathecal therapy has recovered in spite of this interference and not because of it. Sterilisation of the cerebrospinal fluid will not necessarily cure a child with meningitis, nor is recovery directly dependent on the sulphonamide or antibiotic content of the spinal fluid. Meningitis is a systemic disease and intensive systemic therapy is the best form of treatment.

Warwick. WILFRID F. GAISFORD.

PROSTATIC CANCER

SIR,—I have read Dr. Gutmann's letter on adrenalectomy for prostatic cancer (Aug. 3) with great interest. Like him, I have considered attacking the pituitary directly by radiation. After consideration, however, it seemed best to avoid over-inhibition of the pituitary by periodic administration of œstrogens. For some two years, at the Meath Hospital, Dublin, we have been giving œstrogens for alternate weeks only, hoping thus not to excite the adrenals into compensatory overproduction of androgens.

With such a small and short experience it is not possible to make any definite statement or claim. It can be said, however, that from the clinical point of view the intermittent administration of the œstrogens seems, so far, to be as effective as the continuous.

Dublin. T. J. D. LANE.

C.CM. OR MILLILITRE?

SIR,—Dr. Beaumont in his letter of Aug. 3 is so concerned with what he considers to be the impropriety of converting cubic centimetres into millilitres that he seems to have lost sight of the subject of my first letter, the fact that the millilitre and not the cubic centimetre is the correct subdivision of the litre and that the cubic centimetre should never be used as an alternative to the millilitre with which it has no connexion.

He does not agree that my suggestion to convert cubic centimetres into millilitres is a valid procedure for ordinary medical purposes. In this he is not supported by the *British Pharmacopœia* (1932) which states (p. 639) that the millilitre (not the cubic centimetre) is the proper subdivision of the litre and gives a conversion-equivalent which justifies my advice.

Dr. Beaumont refers to the predicament in which he finds himself of having to use a syringe graduated in cubic centimetres, but apparently does nothing about it beyond saying that he likes to call a cubic centimetre a cubic centimetre. For himself he can do as he likes, but for the sake of others he should convert into millilitres in deference to the official nomenclature of the *British Pharmacopœia* and the fundamental reasons on which that nomenclature is based.

If he persists in an outmoded and incorrect nomenclature there is nothing more to be said except perhaps to add that his self-made difficulties could be resolved if he and other clinicians arranged with manufacturers to graduate syringes in millilitres. Scientific workers have long ago done this for their measures of capacity. It is a reproach to clinicians that they lag behind.

London, S.W.7. J. M. HAMILL.

PS.—Since writing the above I have seen a pamphlet on Penicillin Treatment by Dr. Beaumont and Dr. Palmer. In this pamphlet millilitres are used throughout even when measuring from a syringe. I congratulate Dr. Beaumont on his adoption of the correct nomenclature.—J. M. H.

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THE NATIONAL LOAF

SIR,—THE LANCET took a brave share during the war in the battle for a pure and nutritious national loaf, a battle which succeeded after three years' struggle (1939–42) in compelling the Ministry of Food at long last to supersede the 70% extraction of the national loaf by an 85% extraction from April, 1942. The "discovery" (of dubious sanction) that high-extraction flour was rendered positively dangerous for human consumption by the presence in the germ of a constituent (phytic acid) which militated against the assimilation of "calcium" was the springboard for the decision taken by the Ministry of Food to add chalk to the national flour as a means of combating this supposed ill effect. This addition was hotly criticised in your columns and I submit that the addition has lost authority in the intervening years. The whole-wheat grain has formed the staple diet of the human race for immemorial ages; it is surely repugnant alike to common sense and to universal experience to pretend, as a certain small section of opinion contends, that high-extraction flour for the national bread unless "fortified" by chalk is positively mischievous.

It is to be noted, incidentally, that the Ministry of Food in its communications to the public and even in parliamentary answers has consistently avoided the use of the word "chalk" to describe this addition; it has been variously camouflaged as "calcium," which is a misdescription, and as "creta," which is its Latin equivalent, unintelligible to the great mass of the public who are thus, I submit, deliberately misled.

Alterations in the composition of the national flour have been made in the last five years with bewildering frequency, mostly in the form of secret instructions to controlled millers. The community contributes the not inconsiderable sum of £35 million per annum as a subsidy for bread alone; it is surely entitled to be fully informed, in intelligible language, what it is eating from time to time. I accordingly, in a parliamentary question, requested the Minister to give an undertaking that the public should be immediately informed of any change in the composition of national flour, and the Minister gave me that undertaking (*Hansard*, July 8, 1946). On July 24 the Ministry of Food issued to controlled millers a circular headed "confidential, not for publication" which required them to double the quota of chalk, camouflaged as "calcium," in the national flour. On July 29 the Minister received a protest from me in the form of a parliamentary question, pointing out that this undertaking had not been observed, and on the following day the Minister saw fit to inform the press of the alteration in composition.

The practice began in 1940, and has continued ever since, of making extraneous additions to the national flour supposed to "reinforce" its value, until the Ministry's "prescription" for national bread reads rather like a description of a patent medicine. This tendency was severely criticised (*Times*, Oct. 26, 1940) by the late Sir William Bragg, perhaps the most famous president of the Royal Society in our times. The words he used then are as pertinent now as when they were uttered. He wrote:

> "Science is built on the accumulation of experiences and every scientist knows that he must not base his conclusions only on the last few experiments in the laboratory. . . . Practice is based on the experiments of innumerable years . . . the knowledge thus gained in ages of trial and error are all of value; they are not to be thrown aside in favour of the last galvanometer reading. . . . In this matter of food the scientist is at the present time insisting that certain old ways are best . . ."

and he went on to point out that the nutrition of the nations reached its highest level "when milk and vegetables, fruit and *whole-meal* bread (the italics are mine) were commonly consumed."

London, W.1. E. GRAHAM-LITTLE.

DEMOCRATIC NURSING

SIR,—The excellent article by Mr. Sol. M. Cohen contains many suggestions which, if practised, would be of inestimable benefit to all working in hospitals.

However the idea of a full democratic development must extend, too, to those who lay down rules for administrators. The following is an extract from the duties of a matron enclosed with an application form for a recently advertised vacancy:

> . . . She shall inspect all the wards each day and shall also make similar visits at uncertain hours not less often than once weekly during the night . . .

The suggestion contained in this paragraph is that neither the ward sisters nor those in charge at night are to be trusted in carrying out their normal duties. Until nurses in charge of wards are given a position of responsibility and trust, comparable to that of a physician or surgeon in charge of wards, ward sisters' posts will remain unattractive.

I recently questioned 50 nurses on completion of their State examinations; less than 10% of these girls desired to remain in general hospitals or to become ward sisters. This is a very serious reflection on present attitudes in both municipal and voluntary hospitals. "Lip service" on the value of ward sisters will not suffice.

Central Middlesex County Hospital, London, N.W.10. HORACE JOULES.

MALE NURSES

SIR,—To the constructive observations of Mr. H. J. B. Atkins (July 13, p. 63) might be added the comment that enough use is not yet made of the trained general male nurse. He is in fact unknown to the average general hospital, and, as the *Male Nurses' Journal* recently said, "up to the recent war, some of the medical profession had never heard of a male S.R.N."

Eighteen to twenty years ago there were only 5 training schools for male student nurses; today there are 51, with others affiliated, and 1 for training in infectious diseases. Nevertheless, further numbers might still be trained and employed, particularly now when valuable potential nurses are being demobilised from the Forces.

The male nurse is almost always keen, and unlike some female nurses he remains permanently in the profession, which he regards as his life's work. His ethical standard is no less rigid than that of the qualified practitioner.

A new spirit prevails nowadays. The "starched dictator" is gradually vanishing, and greater reliance is being placed on the team spirit. In my own department the theatre sister is a man, and half of the clinic's nursing staff are males; and we find that female nurses work contentedly with a male "ward sister."

Finally, it may be noted that, while increasing use is certainly being made of the male tutor, there are still some with the diploma of nursing who have not found suitable employment. WILLIAM ITTER, S.R.N.

Department of Urology, General Hospital, Newcastle-upon-Tyne.

PROPHYLACTIC PENICILLIN

SIR,—The extension of the use of penicillin to the prophylactic field is an obvious one, and it is being widely and increasingly so used in surgery at the present time. I would, however, like to comment on two points raised by Mr. R. Wood Power in your issue of July 6.

Firstly, his statement that postoperative thrombosis is caused by infection is not in accord with the weight of present-day evidence or opinion. But apart from theoretical considerations I have had a case of fatal postoperative pulmonary embolism proved by post-mortem in a patient whose infection had been completely cleared up by penicillin. It was a case of a carbuncle which resolved as a result of the giving of 1,600,000 units of penicillin. A granulating area was left which was bacteriologically sterile, and some days after the area had become sterile a skin-grafting operation was performed. The patient died suddenly thirty-six hours after operation from pulmonary embolism. It could, of course, be argued that the thrombus developed before the infection was cleared up. But a case such as this, added to theoretical considerations, shows that very strong positive evidence will have to be brought forward before penicillin can be regarded as a prophylactic against thrombosis and embolism.

The second point I would like to comment on is the use of penicillin in the prophylaxis of postoperative chest complications. I have had two patients who ten days after operation developed chest complications in spite of earlier prophylactic courses of 500,000 and

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750,000 units of penicillin. In both cases the inflammatory trouble was at the bases of the lungs, and clinically and radiologically seemed to be secondary to collapse. It was thought that the collapse may have developed after operation but that immediate inflammatory phenomena were prevented by the penicillin.

While not detracting in any way from the extreme value of penicillin in the prevention of infective pulmonary complications after operation, these cases do emphasise that the other factors, chiefly of a mechanical nature, that are concerned in these complications must also be combated.

London, W.1. DAVID H. PATEY.

SUPPLY AND DEMAND

SIR,—Your annotation under this heading on June 29 is most revealing.

During the war, in correspondence in the medical and lay press, attention was frequently drawn to the civilian practitioner carrying on under great difficulties, and asking only for assistance, and the chance of a "rest" in the Forces. To those of us enjoying this "rest" from congenial work and the presence of our families, this picture always seemed to be a trifle overpainted. We accepted it, but with reservations.

How justified were these reservations is now fully apparent. The only body that is displaying any eagerness for our assistance is the Army, which has deferred our release as "operationally vital" until relieved by doctors fresh from the hardships of civilian life.

R.M.O., M.E.F.

AID TO DEFÆCATION

SIR,—Some years ago when recovering from an attack of lumbar fibrositis I found myself with a difficulty in defæcation owing to any effort at straining being painful. While at stool I began to rub my lower back to relieve the stiffness, mainly along the line of the lumbar muscles on the left side down to the middle of the buttock, and noted after rubbing for a minute or two that the rectum emptied itself easily and with comfort. This appeared probably to be due to reflex stimulation acting through the posterior branches of the spinal nerves. I have tried the effect many times since whenever there was a tendency to constipation, without the use of any laxatives, and have found it almost invariably successful. Whether it acts by stimulating the rectal musculature to contract, or whether it relaxes the pelvic sphincter and allows the passage of fæces into the rectum and their evacuation as a consequence, I have been unable to determine. No doubt the sceptic will say that the real explanation is that more time is allowed for natural functions to come into play through the time taken in massaging the back, but that is not the case.

Possibly others may find the experiment worth trying. The effect is perceived a minute or two after the massage, which need not be carried on for more than a minute or so. Perhaps it might be described as *vis a tergo* in contrast with the frontal attack of the usual laxatives.

C. W. B.

INFECTIOUS DISEASE IN ENGLAND AND WALES

WEEK ENDED AUG. 3

Notifications.—Smallpox, 0; scarlet fever, 940; whooping-cough, 2092; diphtheria, 246; paratyphoid, 7; typhoid, 60 (54 in Cardiganshire); measles (excluding rubella), 3540; pneumonia (primary or influenzal), 356; cerebrospinal fever, 44; poliomyelitis, 23; polio-encephalitis, 1; encephalitis lethargica, 1; dysentery, 59; puerperal pyrexia, 146; ophthalmia neonatorum, 72. No case of cholera, plague, or typhus was notified during the week.

The number of service and civilian sick in the Infectious Hospitals of the London County Council on July 31 was 908. During the previous week the following cases were admitted: scarlet fever, 54; diphtheria, 25; measles, 59; whooping-cough, 32.

Deaths.—In 126 great towns there were no deaths from enteric fever or scarlet fever, 1 (0) from measles, 7 (0) from whooping-cough, 1 (0) from diphtheria, 36 (6) from diarrhœa and enteritis under two years, and 4 (1) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 265 (corresponding to a rate of 31 per thousand total births), including 37 in London.

Public Health

Typhoid at Aberystwyth

UP to Aug. 12 105 patients had been admitted to hospitals in Wales, and less than a dozen others, suspected of having been infected at Aberystwyth, were in hospitals in England.

Inquiries lead to the conclusion that in the large majority of the patients infection occurred on July 11. Four-fifths of them reside in the borough and rural district of Aberystwyth, and it appears that the most heavily infected portions of ice-cream were consumed by local inhabitants attending church excursions and a youth rally and were not available on a large scale to the ordinary holiday-makers.

The number of cases ascertained from day to day is now beginning to fall. The infection is of only moderate severity, but more deaths are expected.

The suspected carrier is a urinary excretor. Up to the present *Bact. typhosum* has not been found in his stools after four examinations. The organism recovered from his urine belongs to Vi-bacteriophage type C. Organisms of the same type have been recovered from several of the patients.

Poliomyelitis near London

The occurrence of cases of infantile paralysis in three London suburbs has attracted the attention of the daily press. The position is not unusual and the incidence not untoward. Notifications in England and Wales during the six weeks ending Aug. 3 were 8, 9, 12, 10, 18, and 23. In the corresponding weeks of the previous year they numbered 8, 15, 12, 16, 22, and 21, and the upward trends express the usual seasonal rise.

Pre-existing foci were at Barnet and Potters Bar, but during the past week single cases have been diagnosed at Malden and Coombe borough, Sutton and Cheam borough, and Merton and Morden urban district.

Obituary

GEORGE RONALD PYM ALDRED-BROWN

M.A., D.M. OXFD

Dr. G. R. P. Aldred-Brown, consulting physician to the Royal National Hospital for Rheumatic Diseases, died at his home in Bath on July 26. Seven years ago a serious illness had forced him to give up some of his work, but his interest in the hospital was unabated, and he had lately taken a leading part in the development of its occupational therapy department. For some months he had not been well, and last year he retired from the active staff of the Royal National, where for 9 of his 15 years' service he had been senior physician.

Born in 1896, the son of the late Richard Aldred-Brown, controller-general of education in the Egyptian civil service, he was educated at Harrow and Oxford, where he entered Keble College with a natural science scholarship. He broke off his studies to serve, during the 1914–18 war, in the Royal Field Artillery, reaching the rank of captain, and on his return in 1918 he completed his medical course at the London Hospital, graduating B.M. in 1924. Before settling in Bath he held the appointments of pathologist and bacteriologist at the Dorset County Hospital, and his published work included papers on the blood sedimentation-rate and plasma proteins. In 1936 he also published in our columns an article on radiography of the hand in chronic rheumatic diseases—describing the careful investigation of 154 consecutive cases. Last year his growing interest in reablement was responsible for a paper on spa treatment and the injured workman in the *British Journal of Physical Medicine*. A member of the International Society of Medical Hydrology, he was for some years treasurer of the British section. His friends at the Bath Club will remember his expertness at billiards, and he was also keen on golf and lawn-tennis.

Dr. Aldred-Brown married Miss Doreen Crowe in 1925, and she survives him with a daughter, who is at Bristol University.

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Notes and News

FOR THOSE IN DIFFICULTIES

In its 26th year the Professional Classes Aid Council report as usual much timely help to professional men and women, or their dependants, who have fallen on hard times. Some, being elderly, are no longer able to work for themselves; others are young and need help to complete their education. Some £3700 has been spent on school fees and outfits for children, and more than £1500 on help to 31 women and 16 men students, of whom 11 were medical students. Many people have had temporary help in time of sickness. The total income of the council for the year came to £14,052, of which nearly £3000 was derived from investments. Happily the year ended with £1658 in hand instead of the deficit of recent years. To maintain their work at the present standard, however, the council will need generous support in the coming year. Those wishing to help should write to the secretary, 20, Campden Hill Square, London, W.8.

University of Cambridge

Mr. G. D. Greville, D.SC., has been appointed lecturer in biochemistry.

University of London

Mr. W. C. W. Nixon, F.R.C.O.G., has been appointed to the university chair of obstetrics and gynæcology tenable at University College Hospital medical school, from Oct. 1. For the past two years he has held the chair of obstetrics in the University of Istanbul.

Dr. Ronald Hare has been appointed to the university chair of bacteriology tenable at St. Thomas's Hospital medical school, from Oct. 1.

The title of professor of physiology has been conferred on Mr. W. R. Spurrell, F.R.C.S., in respect of his post at Guy's Hospital medical school.

The title of reader in physiology has been conferred on Mr. L. E. Bayliss, PH.D., in respect of his post at University College; and the title of reader in pathology on Dr. S. J. De Navasquez, in respect of his post at Guy's Hospital medical school.

University of Sheffield

Prof. C. P. Beattie has been appointed to the chair of bacteriology from Oct. 1, in succession to Prof. Wilson Smith, who has left the university to occupy the chair of bacteriology at University College Hospital medical school.

Professor Beattie was educated at Fettes College and the University of Edinburgh, where he graduated M.A. in 1925 and M.B. in 1928. He held an appointment as house-surgeon at the Royal Infirmary and was president of the Royal Medical Society, Edinburgh. In 1930 he obtained the D.P.H. After bacteriological experience in the hospitals and University of Edinburgh, he went, with a Rockefeller fellowship, to the United States and to France, returning to Edinburgh in 1933 as a lecturer in bacteriology. In 1937 he left this country to become professor of bacteriology in the Royal Faculty of Medicine, Iraq; in Bagdad he started the government bacteriology laboratory, which is the bacteriological centre for the whole of Iraq, charged with the preparation of protective vaccines and sera as well as the conduct of bacteriological examinations. Among other duties he set up a quarantine laboratory for the examination of pilgrims returning from Mecca. His researches have covered a wide field, and he has taken a special interest in undulant fever.

University of Durham

Mr. John Boyes, L.R.C.P.E., L.D.S., has been appointed Nuffield professor of oral medicine.

North Persian Forces Memorial

The North Persian Forces memorial medal will be awarded again next year, after a lapse of nine years.

This memorial was founded in 1923 by officers of the Royal Army Medical Corps and Indian Medical Service who served with the North Persian Forces during the war of 1914–18. It is a silver medal and is awarded annually for the best paper by a single author on tropical medicine or tropical hygiene published during the twelve months ending Dec. 31 by any medical officer of under 12 years' service in the Royal Navy, Royal Army Medical Corps, Royal Air Force, Indian Medical Service, or Colonial Medical Service. Only officers on a regular or short-service engagement are eligible for the award.

A Gift from Sweden

In recognition of medical attendance to Swedes during the war, Sweden recently presented some X-ray equipment to the National Hospital, Queen Square, London. It includes a special Swedish invention in this field—namely, a precision apparatus for cranial radiography, constructed by Prof. Erik Lysholm, of the Serafimer Hospital, in Stockholm, and built by the firm of G. Schönander.

Central Council for Health Education

Lord Woolton has been re-elected president of the council, Sir Allen Daley and Dr. Charles Hill vice-presidents, and Mr. E. G. Savage treasurer. Mr. Henry Lesser, LL.B., has been elected chairman of the council, and Dr. E. K. Macdonald vice-chairman.

Return to Practice

The Central Medical War Committee announces that the following have resumed civilian practice:

Mr. T. KEITH LYLE, F.R.C.S., 42, Charles Street, Berkeley Square, W.1.
Mr. G. C. SAWYER, M.S., F.R.C.S., 6, St. John's Road, Leicester.
Dr. J. D. SPILLANE, 110, Cathedral Road, Cardiff.

Medical Diary

AUG. 18 TO 24

Thursday, 22nd

EDINBURGH POSTGRADUATE LECTURES
4.30 P.M. (Royal Infirmary.) Dr. R. M. Murray-Lyon: Ætiology and Diagnosis of Amœbiasis.

Appointments

BICKFORD, R. G., M.B. Camb., M.R.C.P.: research associateship in neurology, Mayo Clinic, Rochester, U.S.A.
BINNING, REX, M.B. Camb., M.R.C.S., D.A.: anæsthetist, Royal Sussex County Hospital, Brighton.
BUCHANAN, D. S., M.B. Durh.: county M.O.H. and school M.O., Huntingdon.
FOSTER, F. G., M.D. Edin.: M.O.H., Birkenhead.
FRESHMAN, EDGAR, M.B. Manc., F.R.C.S.: consulting urologist, Ramsgate General Hospital.
GOODWIN, J. F., M.D. Lond., M.R.C.P.: first asst., medical unit, Royal Infirmary, Sheffield.
HART, F. D., M.D. Edin., M.R.C.P.: physician, Royal Waterloo Hospital, London.
MACPHERSON, IAN, M.D. Leeds, M.R.C.P.: asst. physician, General Infirmary, Leeds.
MEIR, M., M.B. Birm.: asst. surgeon, District Infirmary, Ashton-under-Lyne.
MILLIS, G. C., M.C., M.D. Camb., M.R.C.P.: physician, Royal Waterloo Hospital, London.
MOFFATT, P. McG., M.D. Lond., M.R.C.P., F.R.C.S., D.O.M.S.: consultant ophthalmic surgeon, central medical staff, L.C.C.
MOORE, THOMAS, M.D., M.S. Durh., F.R.C.S.: asst. surgeon, District Infirmary, Ashton-under-Lyne.
RICHMOND, J. H., M.B. Camb.: examining factory surgeon, Wolverhampton no. 1 district.
SEYMOUR-JONES, J. A., M.B. Camb., F.R.C.S., D.L.O.: registrar, Portsmouth and Southern Counties Eye and Ear Hospital.
SMAILES, T. W., M.B. Camb.: examining factory surgeon, Honley, Yorks.
SMYTHE, P. M., M.B. Camb.: first asst. and registrar, children's dept., London Hospital.
STEWART, A. B., M.D. St. And., D.P.H.: M.O.H., Paddington (subject to approval of Ministry of Health).
THOMPSON, SYDNEY, M.D. Durh.: dermatological specialist medical refereee for county-court districts of Alnwick, Berwick-on-Tweed, Consett, Gateshead, Hexham, Morpeth and Blyth, Newcastle-on-Tyne, North Shields, South Shields, Seaham and Sunderland (circuit no. 1).
THOMPSON, VERNON, M.B. Lond., F.R.C.S.: asst. surgeon, thoracic dept., London Hospital.
TREBLE, H. A., B.M. Oxfd, M.R.C.P.: consulting dermatologist, Ramsgate General Hospital.
WALTON, W. S., M.D. Durh.: M.O.H., Newcastle-on-Tyne.

Births, Marriages, and Deaths

BIRTHS

COLWILL.—On August 4, at Edgware, the wife of Dr. C. K. Colwill—a daughter.
DAYNES.—On August 4, in London, the wife of Dr. Guy Daynes—a son.
EDNEY.—On August 6, the wife of Dr. Roy Edney, of Ashford, Middlesex—a son.
GARWOOD.—On August 4, at Hove, Dr. Dorothea Garwood (*née* Leslie-Smith), wife of Lieut.-Colonel J. C. Garwood, D.S.O., R.E.—a daughter.
RUTHERFORD.—On August 4, at Brighton, the wife of Dr. Raymond Rutherford—a son.
THOMSON.—On August 4, the wife of Dr. J. L. S. Thomson, of Winchmore Hill, N.21—a daughter.
TOMLINSON.—On August 4, the wife of Dr. A. J. H. Tomlinson, of Howitt Road, N.W.3—a daughter.
WILLIAMS.—On August 7, at Swansea, the wife of Mr. Bernard L. Williams, F.R.C.S.—a son.

MARRIAGES

EASTON—LATHAM.—On July 29, in London, Alfred Leonard Tytherleigh Easton, M.R.C.S., to Josephine Mary Latham.
REID—PEDLER.—On July 25, in London, Douglas Andrew Campbell Reid, M.B., M.R.C.S., to Margaret Joyce Pedler.

DEATHS

SLATER.—On July 30, at Godalming, William Arnison Slater, M.R.C.S.
THORNE THORNE.—On August 5, Vernon Thorne Thorne, M.B. Camb., D.T.M. & H., Colonial Medical Service, Nigeria, aged 41.

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SERIOUS PSYCHIATRIC DISABILITY AMONG BRITISH OFFICERS IN INDIA

R. F. TREDGOLD
M.B. Camb., D.P.M.
LIEUT.-COLONEL R.A.M.C.

G. KELLY
L.R.C.S.I.
MAJOR R.A.M.C.

H. N. HEFFERNAN
M.R.C.S.
CAPTAIN R.A.M.C.

P. R. W. LEIGH
B.M. Oxfd
MAJOR I.A.M.C.

SPECIALISTS IN PSYCHIATRY

I. Analysis of Clinical Material

A STUDY has been made of a group of 150 British officers with psychiatric illness necessitating their discharge from the Army or evacuation to the United Kingdom. The hospital in Western India at which this work was done took all such cases from all over India and SEAC. No selection has been made except to omit a few cases with inadequate clinical records.

The numbers seemed large enough to warrant an investigation of whether the factors involved could be modified to save the wastage of officers, and whether information could be obtained which would be of value to selection boards. This investigation can scarcely be regarded as a follow-up of the previous work of the selection boards, since only a few of the officers in this group had passed through the present type of War Office or G.H.Q. selection board. All were admitted during 1944.

INVESTIGATION

To collect information, a proforma was designed as follows:

Name	*Predisposing factors:*
Unit	(*a*) Action
Age	(*b*) Frustration
Total service	(*c*) Domestic
Indian service	(*d*) Physical
Commissioned service	(*e*) Inadequacy
Selection board	*Precipitating factors:*
Diagnosis	(*a*) Action
Progress	(*b*) Frustration
Disposal	(*c*) Domestic
Previous personality	(*d*) Physical
Family history	(*e*) Inadequacy

An attempt was made to assess the importance in each case of the following factors:

Previous Personality.—These were considered as (*a*) major defects which had interfered with the patient's work or taken him under treatment; and (*b*) minor defects, such as solitariness, oversensitiveness, and ineffectiveness, which would have been obvious to the skilled observer but might not have (and in some cases had not) prevented their owner from being passed by a selection board.

Family History.—This was investigated from the point of view of (*a*) a home broken by separation, divorce, or death of the parents; and (*b*) a definite history of psychological illness in parent or sibling.

Predisposing factors were those which had been in operation for some three months at least before breakdown.

Precipitating factors were those which occurred just before the onset of the symptoms.

Both predisposing and precipitating factors were split into five groups: (1) enemy action; (2) frustration; (3) domestic; (4) physical; and (5) inadequacy for job.

FINDINGS

The findings have been analysed in tables I–V. Table I shows the incidence of the various disorders in the different arms of the Service, separated into forward and base areas. The following points are shown more easily in separate tables.

(1) The forward-area cases of all types amount to only 20% of the total, whereas the forward-area psychotics comprise 30·4% of all psychotics (table II).

(2) The proportion of forward-area to base-area cases is considerably greater in the Service Corps and infantry than the average, and far higher than in sappers and doctors (table III).

(3) The proportion of schizophrenia to anxiety is higher in infantry officers than in other arms (table IV).

(4) The relative distribution of all officers in the various arms of the Service in India and SEAC, as shown in table I, is only approximate. But it is permissible to note that these 150 cases included 18 doctors (16 from base areas) and 21 sappers (19 from base areas).

(5) The incidence in age- and service-groups would again be liable to mislead, if shown without the distribution of all officers. But it was observed that there was a group of men who broke down within a year of disembarkation, especially within the second six months of that year (31 cases out of the 150). Also that the highest incidence of breakdown was in officers with over 4 years' total service (95 cases); the next highest peak was between $2^1/_2$ and 3 years' total service (14 cases).

Table V shows the relative importance of factors other than age- and service-groups in the various syndromes.

II. Discussion (R. F. TREDGOLD)

Owing to the fact that the four of us have been scattered, a full interchange of views on the clinical work reported above has not been easy and has been more by writing than by speech. While, therefore, I have incorporated in the following discussion numerous suggestions made by one or the other of my colleagues, and am most grateful for these, the final conclusions must be regarded as my own responsibility.

TYPES OF CASES

The figures are too small to be of much significance, but anxiety states comprised 42·6% of all cases. The association of alcoholism in 6 cases aggravated the condition by producing further inadequacy and irritability, and sometimes criminal irresponsibility. Depression provided only 5·3%, being equalled by paranoid states and outnumbered by manias and hypomanias together.

It was noted by Craigie (1944), in his review of two years' psychiatry in the Middle East, that mania and depression there occurred in approximately the same proportions. This is in contrast, in my experience at least, to conditions in England in 1941, where depression was considerably commoner than mania. The proportion of the two combined compared to schizophrenia was in India approximately 2 : 3 and in Craigie's cases approximately 1 : 3, while in a military mental hospital in 1941 in U.K. it was approximately 1 : 1. This change is undoubtedly partly explained by the fact that the term "depression" is now used more strictly than in U.K., and cases previously labelled "depressive states" would fall into the new nomenclature's "anxiety state." Apart from this, however, there appears to be a real increase in India of manic states, of which the precise cause is difficult to ascertain. Clinically, the cases which were generally slow in onset were slow in progress. Elation was less marked than overactivity, and persecutory ideas were common, being usually, and perhaps not unnaturally, referred to the restrictions necessarily imposed on the patient's military career. It is a possible field for speculation whether an increase of mania is a response to a prolonged sense of urgency engendered by total war.

Schizophrenic states formed nearly 20% and tended to run the course associated with this syndrome in war-time. They were, moreover, associated in many cases with exogenous factors (see below).

INCIDENCE AT THE BASE

The number of breakdowns in base areas is much greater than in forward areas. There are two possible

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TABLE I—INCIDENCE OF DISORDERS IN THE GROUP ACCORDING TO ARMS OF THE SERVICE

Diagnosis	Total	Infantry		Engineers		Medical		Artillery		Service		E.M.E.		Ordnance		Armoured		Others	
		Base	Fwd	Base	Fwd	Base	Fwd	Base	Fwd	Base	Fwd	Base	Fwd	Base	Fwd	Base	Fwd	Base	Fwd
Anxiety, and anxiety plus alcohol ..	64	7	5	8	1	9	..	6	2	2	1	4	..	6	..	2	1	9	1
Hysteria	12	1	..	..	..	..	..	4	..	1	..	..	1	1	..	1	..	3	..
Post-traumatic ..	3	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..
Toxic	4	1	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	1	..
Psychopathic personality	11	1	..	2	..	..	1	1	..	..	..	2	..	..	..	..	..	4	..
Schizophrenia ..	29	6	4	2	1	3	..	1	1	1	2	2	..	1	1	1	..	2	1
Paranoid state ..	8	..	..	2	..	1	..	..	..	..	..	1	1	..	..	..	..	2	1
Cyclothymia, hypomania, and mania	11	1	2	2	..	3	1	..	..	..	..	..	..	..	..	..	..	1	1
Depression	8	2	..	3	..	..	..	..	..	1	1	..	..	1	..	..	..	..	..
Total ..	150	20	11	19	2	16	2	13	3	6	4	9	2	10	1	4	1	23	4
Percentage distribution: Psychiatric cases	100	13·3	7·3	12·7	1·3	10·7	1·3	8·7	2·0	4·0	2·7	6·0	1·3	6·7	0·7	2·7	0·7	15·3	2·7
Total officers (approximate estimate) ..	100	8·0	6·0	7·0	6·0	9·0	4·0	2·0	6·0	4·0	4·0	2·0	1·0	4·0	1·0	1·0	2·0	21·0	12·0

The percentage distribution of all British officers in the various arms, in base or forward areas, for the period under review, is unfortunately not available in exact detail but appears to be of the above order.

explanations for this: (1) that in a base area there is a higher proportion of potentially unstable officers; and (2) that the stress in the base areas is greater.

The first explanation would be supported by the observation that the cases here included some who had been given their base jobs because they had been found inefficient elsewhere; in fact, they were throw-outs sent, often in a lower rank, to do what was regarded as a softer job. Inquiry showed that they had never been anything but a menace to an efficient office.

The second explanation appears unlikely. In fact, the reverse is the official opinion of the Directorate of Selection of Personnel (1944): "The staff officer's dealing with persons is . . . carried out under far less emotionally difficult conditions." This, however, is in my opinion open to question. It is true that the infantry officer may at times be exposed to physical and mental

TABLE II—INCIDENCE OF DISORDERS IN FORWARD AND BASE AREAS

Diagnosis	Forward	Base	Total
Anxiety, and anxiety with alcohol	11	53	64
Hysteria	1	11	12
Post-traumatic	..	3	3
Toxic	..	4	4
Psychopathic personality ..	1	10	11
Schizophrenia	10	19	29
Paranoid state	2	6	8
Cyclothymia, hypomania, and mania	4	7	11
Depression	1	7	8
Total	30	120	150

strain of a kind and intensity never experienced by his colleague at base headquarters; but this is for very limited periods in between which he is probably physically healthier, and (which is more important) more satisfied. He can, moreover, give vent to his aggressive impulses, and he obtains satisfaction from the crumbs of glory thrown to him by the daily press and from occasional decorations. It is easier for him to feel one of a team; his results and objectives are nearer.

The staff officer, on the other hand, has little or no physical exercise, long office hours, and less hope of obtaining promotion by death of his seniors. Though the typewriter may be mightier than the machine-gun, he seldom has the satisfaction of using the keys himself as an outlet, and any anger or irritation he feels is more likely to be vented on other departments than on the enemy. In these circumstances it is no wonder that acid letters, childish squabbles over unimportant details, and abuse of rank are known. Once they arise, they aggravate the condition, and there can be few formations where no-one has thought: "We could get on with the war if only they would let us" ("they" being the next higher formation). Conversely, the higher formation is quick to sense affronts to its own dignity or infringement of its rights by the lower, and "So-and-so's private army, division, or area" is a term symptomatic of this feeling.

McCurdy (1943) has analysed very clearly the reasons for the frustration felt by an officer, especially junior, with technical competence who ends by "cursing red tape, cursing his superiors, cursing the stupidity of the official mind. But there may have been no obstructiveness, but everywhere a desire to do one's best." Balchin's picture in *The Small Back Room* expresses such feelings most graphically.

Other evidence of this tension is the sense of "being out of it," which nearly all base officers display. Termed by some "non-combatant guilt," this may be underlying shame at not being exposed to personal danger when others are, particularly if these are close friends or likely, after the war, to be close neighbours. The projection of this feeling is the cause of the emotion engendered in base areas over anyone suspected of "shirking."

It must, therefore, be seriously considered whether there is not as much psychological stress to be encountered by officers in base areas as by those in moderately close contact with the enemy. The figures of incidence in this study seem to support this suggestion.

In any case, there can be no doubt that the diminution of the stress described in base areas is a problem of high practical importance. On the efficient functioning of staff work depends, obviously, the success of the battle. It is as dangerous to clutter up staffs with unsuitable officers as it is to put potential psychiatric casualties in tanks. The result may be less striking and less easy to assess, but the loss of efficiency to the whole Army can be assured.

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The first step to a solution is a realisation of its complications; for example, it is much easier to accept an over-severe letter, if it is viewed rather as a symptom of frustration than as one of a permanent attitude of mind (bloody-mindedness); and the recipient is more likely to indulge in satisfactory action than in a counter-attack. (In the same way it is easier for a doctor to accept the rudeness of a patient, which he knows to be symptomatic of underlying psychological trouble, than the plain speaking of an apparently reasonable friend. This sometimes produces the paradox that the more reasonable the friend, and the advice, the more resentment is felt and the less is the advice followed.)

This realisation can undoubtedly be helped by visits; the officer who has been previously but an illegible signature or an indistinct voice on the telephone surprisingly becomes a human being.

It would also be valuable to see that the public (and so the staff officer too) are kept informed of the need for, and the importance of, staff work in continuing the war.

Physical exercise, regular leave, or at least a change of scene, and some time off once a week, are essential. Such measures may be scorned by the strongest of us but will influence the weaker, who are here our problem. It is the lack of all the above which damages the individual's sense of proportion and sense of humour, which should be firm sheet anchors of his stability.

TABLE III—FORWARD- AND BASE-AREA CASES IN SEVERAL ARMS

Area	Service Corps	Infantry	Engineers	Medical	Others
Forward ..	4	11	2	2	11
Base ..	6	20	19	16	59

If efficient planning is essential, those who provide it should be honoured as much as the combatant, and every effort should be made to bridge the gulf which splits the Army. In parentheses, it is questionable whether arm-bands, which accentuate the difference between staff and combatant, serve a useful purpose.

SPECIALISTS

(1) The proportion among the R.A.M.C. and I.A.M.C. is very disturbing. It has been noted elsewhere, and Reider (1944) produced an interesting explanation. He suggested that doctors were largely attracted by the feeling that they had power of life and death over their fellows or by a narcissistic satisfaction of being closer to God. He considered that this was impossible in the less personal framework of the Army, and that the M.O. suffered from its loss.

Even if this theory were accepted, it would not seem a full explanation; for opportunities for "narcissistic satisfaction" are by no means absent from the ordinary M.O. and to some extent are encouraged by his brother officers in the mess. It seems more probable that other factors have more weight: lack of physical fitness, and so lack of resistance to intercurrent infection; some, but incomplete, knowledge of the possibilities of tropical disease; and lack of personal morale, owing either to inability to vent one's aggressive tendencies as well as one's fellow, or to the proximity in base hospitals of many patients whose morale is lower than that of men in the front line.

TABLE IV—INCIDENCE OF VARIOUS DISORDERS IN SEVERAL ARMS

Diagnosis	Infantry	Engineers	Medical
Anxiety states	12	9	9
Schizophrenia	10	3	3
Cyclothymia, hypomania, and mania	3	2	4
Other diagnoses	6	7	2
Total	31	21	18

Alternatively, it has been suggested that the doctor's basic ideology is brought into sharp conflict with the needs of the military machine. This, however, is scarcely such a conflict (for most doctor's efforts are still directed to healing, directly or indirectly) as that experienced by the average citizen called on personally to learn to kill.

(2) The number of sappers also calls for inquiry. These, again, were predominantly from base areas rather than field units. The patients appeared to have done a comparable job perfectly satisfactorily in England but to have soon failed in India. They were asked why

TABLE V—RELATIVE IMPORTANCE OF FACTORS IN VARIOUS SYNDROMES

Diagnosis	Total	Previous personality defects		Family history		Predisposing factors					Precipitating factors						
		Gross	Minor	Bad environment	Bad heredity	Action	Frustration	Domestic	Physical	Inadequacy	Nil	Several	Action	Frustration	Domestic	Physical	Inadequacy
Anxiety	58	6	20	9	5	10	3	10	11	18	..	8	6	9	18	12	21
Anxiety complicated by alcoholism	6	..	1	..	1	1	1	4	..	2	..	4	1	1	4	2	2
Hysteria	12	..	7	1	..	..	3	3	1	6	1	5	1	3	4	5	6
Post-traumatic	3	..	1	..	..	1	..	..	1	..	..	..	..	..	..	2	1
Toxic psychosis	4	..	1	..	..	..	..	..	1	1	..	2	..	..	..	4	2
Psychopathic personality with emotional abnormality ..	11	2	8	1	2	1	..	3	..	4	1	..	..	..	3	1	6
Schizophrenia	29	4	13	2	6	2	4	2	2	7	4	6	9	4	4	8	6
Paranoid state	8	1	1	..	1	1	1	1	..	2	1	2	1	3	2	2	2
Cyclothymia	2	1	1	..	1	..	1	1	1	..	..	2	..	1	2	1	..
Mania	4	1	3	..	1	..	..	1	..	2	..	..	2	..	1	1	1
Hypomania	5	..	1	..	..	..	1	2	1	..	2	2	3	..	..	2	..
Depression	8	1	1	1	3	..	1	..	2	1	1	1	1	..	3	2	2
Total	150	16	58	14	20	16	15	27	20	43	10	32	24	21	41	42	49

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they thought this was. The following extracts are an answer:

". . . Apart from the usual troubles of language difficulties, dumb insolence, very often assumed, maybe, physical differences of race, methods of execution of work, and the age-old lacking of drive and will-chase to get a job done. Those things one can expect but cannot realise their depth until experienced. There is one great factor, which will in time bring *many* Works Service personnel to you, or very nearly, and certainly demoralise many previously industrious and keen men—that is, graft."

"I have fought hard against becoming 'bolshy'—when surrounded by discontented men—but having had much time to think, I find that anyone coming to India even 100% fit, not war-weary or overworked in the past, any reasonably conscientious person who is anxious to do his job, get on and do as much as he can, knowing that a large number are really fighting; that person is going to find himself against a brick wall."

"I was recommended for my majority within nine months of joining the army—so feel I'm adaptable to changed conditions. When engineers are sent out in the 35–40 age, with quite a lot of building experience, let a psychiatrist watch their postings, or (better still) give them an emotional test as part of their home medical for tropical service."

By some these comments will be regarded as the outpouring of an unstable man, anxious to justify his failure. It is my opinion, on the contrary, that they should merit very careful consideration. They are by no means exceptional and have been confirmed by men who had no psychiatric disorder.

Generally speaking, specialist corps appeared also to feel frustration more than did combatant officers, partly because they were more often kept hanging about without a job than were infantry officers, partly because it galled them more that their expert knowledge was being wasted. It was not rare for officers to leave England under the impression (probably accurate) that there was a great demand for them in India, but to arrive at a unit where no-one seemed either to expect or to welcome their coming. Vague promises of promotion implied in England were obviously only likely to be fulfilled after a considerable delay—if at all.

AGE- AND SERVICE-GROUPS

Unfortunately the relative proportions of various age-groups among British officers throughout the Indian theatre of war cannot be assessed, but it may be noted that the proportion of psychoneuroses, mostly anxiety states, in men of less than 30 and more than 40 years of age was very considerably higher than in the age-group 30–40. The psychotics, most of whom were schizophrenics, again tended to occur before 30 years of age.

The relative scarcity of serious psychiatric conditions among those of less than $2^1/_2$ years' total service is obvious, as is the gradually increasing burden of longer service. Nearly 60% had been serving at least since Dunkirk, where they had no doubt acquired some predisposition. Many had had commissions all the time or been passed early in 1942 by the older form of board.

The length of service overseas is of interest in that the heaviest incidence occurs in those with less than a year's service, and after this is spread out more or less evenly from $1^1/_2$ to 3 years.

It may further be noted that among those who broke in less than a year the preponderance was of young schizophrenics and psychoneurotics.

The fact that over 30% of the patients broke down so severely within twelve months of arriving in India is a disturbing reflection. Few of these men had been exposed to enemy action or had physical ailments. The important factor, as will be later discussed, was inadequacy in their unit. This is probably explicable on one of several grounds:

(1) That men were deliberately sent out to India who were not wanted in U.K. when preparations were in progress for the Second Front.

(2) That lack of coördination in posting led at times, as discussed above, to leaving a man, busy enough at home, in idleness here.

(3) That men previously satisfactory and adequate in U.K. were unable to be so in India, either because of separation from home, physical weakness, complete lack of preparation for local difficulties, or several factors combined.

Many officers arrived with preconceived ideas about India which did them no good. Either they had heard tales of "the brightest jewel in the crown of the Empire" and were ill prepared for the need for quarrying away the dirt to get at the jewel, or their natural mild homesickness was allowed to become exaggerated on the boat and projected on the various alleged drawbacks of India: poverty, squalor, and corruption which those of previous experience described luridly. There were, further, the mild attacks of diarrhœa and excessive sweating due to climatic conditions, to all of which they had to adapt themselves.

Again, commissioned service was commonly less than a year, or between $2^1/_2$–3 years. The explanation for this is obscure, but it is probable that some were men who had been commissioned in U.K. soon after Dunkirk and, after serving some six months there, had been exposed to moderate but prolonged stress in India.

FAMILY HISTORY

The proportion of broken homes among these cases may be higher than in a normal cross-section of the population, but the figures are scarcely significant. Hereditary factors were noted in over 25% of the psychotics.

Marriage.—The number of married and single men has not been recorded, since the details were not considered full enough to give any reliable evidence. It is felt that such figures would tend to mislead, unless a more profound study of the patients' reaction to marriage than was possible could have been made. The report made by Hastings et al. (1944) on the Eighth U.S. Air Force showed that the young fliers, unencumbered by domestic responsibility, were on the whole the more stable, and it suggested tentatively that it might be wise to forbid marriage for one or two years after graduation from flying training. This suggestion takes no account of those, who must have existed, whose stability was increased by marriage and the founding of a family.

PERSONALITY TRAITS

It was noteworthy that as many as 12 had evidence of a previous major breakdown. As might be expected not one of these had passed through a W.O. or G.H.Q. selection board, though they had been selected after an interview by a (non-medical) board. Only 12 of all the 150 officers had seen a W.O. or G.H.Q. selection board.

The number of minor personality changes may be considered in more detail. This question is obviously very closely bound up with the number of such traits which could be found by careful questioning in the total population, on which very different views are held. Close statistical survey is obviously required before we can come to any definite opinion on the matter, and no detailed study will here be made of the number of so-called psychoneurotic traits (nail-biting, &c.). Instead, attention was concentrated on minor defects which had interfered at some stage with their adaptation to army life, and hence their value. Briefly, they were mostly signs of inability to mix or assert oneself. These were present in 39% of the total, mostly in the hysterics, the psychopathic personalities, and the schizophrenics. Moreover, in these they were associated with feelings of inadequacy at work, which had before been generally kept within bounds but recently had increased rapidly.

PREDISPOSING AND PRECIPITATING FACTORS

In all but a very few cases, both predisposing and precipitating factors were evident, but they were of

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different groups which, perhaps, bore some relation to the previous personality.

Enemy Action.—It is perhaps noteworthy that enemy action did not play a larger part, especially when it is remembered that all British officers being evacuated for psychiatric conditions from India and SEAC within this period would be included within this group.

Also, it was the schizophrenic whose breakdown was precipitated by action. It might be argued that the schizophrenics got as far as the enemy because they appeared, to their colleagues, to be perfectly normal and so were not "eliminated," whereas the psychopaths and hysterics were prevented by O.C. or colleagues from running risks. There may be some truth in this, but it would not be on a large scale. One psychopath got as far as the enemy. Although in such cases one might expect a previous loss of initiative, war "schizophrenics" are atypical, and it is possible that the explanation is rather that these schizophrenics had something the others (psychopaths and hysterics) had not got—initiative and drive—which positive factors would have outweighed, at least in the eyes of comrades and commanders, their negative disadvantages—a point which perhaps has implications regarding the value of assessing positive qualities as well as negative. Men with undoubted personality defect can be accepted and can be of value if (but only if) these defects are counterbalanced by the possession of some initiative, ingenuity, intelligence, and courage.

Frustration was an important factor in more cases and contributed to anxiety, hysteria, and schizophrenic and paranoid states, colouring, as might be expected, the clinical picture.

Frustration also prevented the recovery of convalescent officers from the difficulty of obtaining satisfying employment for them. A vicious circle was again likely, as is easy enough to understand. Officers who were the very type to need consideration at the start of a new job were often by their nature least likely to get it. The waits and disappointments on arriving at a new unit, which may sometimes be regarded as inevitable in such a complex machine as the Army in India, and accepted by most with resignation, were taken by weaker brethren as an easy target on which to project their separation anxiety, and irritation with their senior officers became almost as fixed in them as intense dislike of India was among those whose target was the Indian scene.

Domestic stress largely led to anxiety and was common enough. Examples of stress were bereavement, worry over illness, financial loss, post-war prospects, and concern over real or suspected infidelity, though this last concern is less common among officers than among other ranks.

The *physical disabilities* were generally severe attacks of amœbic dysentery, malaria, or infective hepatitis. Though I would be the last to propose that any of these conditions are without psychological effect on their own unfortunate victims, the results in the cases quoted were not often due to this; rather they were due to the impression which was allowed to gain strength in the patient's mind (at his first attack and onwards) that he was unusually predisposed to such conditions, or unusually weakened by them, and that he would never be well again till he returned to U.K. In such cases, especially in dysentery, as might be expected, symptoms persisted, and this reinforced his conviction. Treatment, to be of any value, had to be given in the very early stages before this idea became fixed; unfortunately, it often was not. As Menninger (1943) puts it, "the end-result was not a blood-stream infection or a gastro-intestinal disease, but a disorder of the whole organism—a disorder of thinking and living."

Inadequacy was common among the anxiety states, the schizophrenics, the hysterics, and the psychopaths. In anxiety states and schizophrenia it was generally a secondary effect, due to the illness and later aggravating it. The hysterics and the psychopaths were naturally inadequate and in no way capable of shouldering normal responsibilities.

PROPOSALS

It can scarcely be denied that the wastage of officers on this scale is serious in its military effects and, possibly, in its medical and social implications. This must be the excuse for discussing such a statistically small number and for venturing to draw conclusions and suggesting proposals to counteract the existing factors.

Breakdown soon after arrival is dangerously common. It is due partly to bad selection, completely inadequate officers having been sent. Some were literally worse than nobody, for they were a dead weight on their units—in particular their C.O.s—and on the medical services. If there were no-one better to send, it would have been better to send no-one.

Selection should obviously be carried out by the machinery of the Directorate of Selection of Personnel. The selectors should beware of young immature men who may not be able to adapt to separation, especially if there are any suggestions of hysterical reactions or emotional abnormality.

Breakdown is also due to a combination of physical ill health, homesickness, and frustration, all of which reinforce each other directly (and indirectly, in that they prevent improvement). This could to some extent be prevented by insisting that mental adaptation to various difficulties must be made before disembarkation. For this purpose a clear statement of what is to be expected, and what will have to be endured physically and mentally, would be beneficial.

The breakdown of many officers after four years' service may well be explained on grounds of fatigue or "war-weariness," which was perhaps inevitable. There is no doubt that if breakdown develops in the few loss of efficiency will develop in the many, and it was wise to base demobilisation on age plus length of service. It was, on the whole, in the officers with long service that domestic stress and physical ill health had most effect. It is probably fair to conclude that it would be improved if long periods of leave at home could be granted after considerably shorter service.

A closer understanding by those in base areas of the reasons for the stresses they undergo might minimise their effect and at the same time promote closer sympathy and coöperation between formation headquarters.

SUMMARY

A study has been made of 150 British officers evacuated on psychiatric grounds from India and SEAC, and an attempt to analyse the various factors concerned in each is described.

Tables of this analysis are shown, and comments are made on the relative importance of the different factors.

Proposals are made to diminish the strength of the operative factors and to call for a closer selection of officers for overseas service.

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REFERENCES

Craigie, H. B. (1944) *Brit. med. J.* ii, 105.
Directorate of Selection of Personnel (India) (1944) Techn. Memo. no. 8.
Hastings, D. W., Wright, D. G., Glueck, B. C. (1944) Psychiatric Experiences of Eighth Air Force, published by J. Macy Jun. Foundation, U.S.A.
McCurdy, J. T. (1943) The Structure of Morale, London.
Menninger, W. C. (1943) *J. Amer. med. Ass.* **123**, 751.
Reider, N. (1944) *Bull. Menninger Clin.* 8, 55.

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VITAMIN A AND SKIN DISEASE

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CLINICAL research on vitamin-A deficiency as a cause of skin abnormalities has developed in several phases. The first phase originated in the observation that skin lesions were often a complicating factor in people with eye lesions, which were later attributed to deficiency of vitamin A. Thus the association of keratomalacia and xerophthalmia with dry scaly skin was noticed by de Gouvêa (1883), Mori (1904), and Bloch (1921). In groups of adult Chinese with keratomalacia, Pillat (1929) and Frazier and Hu (1931) found that the skin was dry and covered with flakes of horny epithelium. They also observed, on the extensor surfaces of the arms and legs, a characteristic eruption of raised papules, which resulted from the blocking of the hair follicles with cornified material. The condition of the skin was much improved by a diet rich in vitamin A. Loewenthal (1933) noted similar lesions in East African prisoners. The papular eruption was present in all cases having xerophthalmia or defective dark vision, and was cured by the administration of cod-liver oil without any other treatment. Nicholls (1938) reported that symmetrical papular eruptions, with dryness and scaliness of the skin, were common among inmates of Ceylonese prisons. The condition was associated with xerophthalmia and keratomalacia, and sometimes with dysentery and neuritis. Nicholls called the skin lesions phrynoderma, a Greek version of the native name of toad-skin.

In this country Goodwin (1934) described a single case with papular eruptions which he considered to be due to vitamin-A deficiency, and which was cured by a suitable diet and cod-liver oil. Youmans and Corlette (1938) had similar experience with 20 cases in America. In infants Helen Mackay (1934) found that the provision of additional vitamin A above that present in the ordinary diet decreased the incidence of sore buttocks, intertrigo, and napkin rash. Lehman and Rapaport (1940) observed follicular papules in association with defective dark-adaptation in American families in receipt of financial relief, and cured both abnormalities by giving massive doses of vitamin A for several months. In India, however, workers in Aykroyd's laboratory found that the severity of eye and skin lesions did not always run parallel, and they raised doubts whether vitamin-A deficiency was the sole cause of phrynoderma (Aykroyd and Rajagopal 1936, Aykroyd and Krishnan 1937, Rao 1937).

Fitzgerald Moore (1940) has emphasised the importance of distinguishing the effects of vitamin-A deficiency from those of pellagra, and Wiltshire (1919) pointed out that in scurvy a condition of follicular hyperkeratosis occurred which was very similar to that of vitamin-A deficiency. Stannus (1945) and Leitner (1945) have also questioned the specificity of vitamin-A deficiency as the cause of phrynoderma and similar conditions, which Stannus considers are identical with keratosis pilaris as seen in this country.

Vitamin A in Common Skin Diseases.—In a second phase of research the problem has been attacked from the opposite direction. Instead of studying skin lesions in subjects believed to be suffering from vitamin-A deficiency, workers have examined the adequacy of the vitamin-A status in subjects with skin disease. The methods of approach adopted by different investigators have included estimations of vitamin A in the blood-serum by chemical methods, the examination of dark-adaptation, and the observation of the clinical effects of dosing with vitamin A.

Marchionini and Patel (1937) found that the serum-vitamin-A level was lowered in eczema and psoriasis but normal in furunculosis. In nearly 300 patients with various skin diseases Schneider and Widder (1938) reported that the average carotene was 25% below normal and vitamin A 36% below normal. Gross (1941) found that cases of nummular eczema were often cured with large doses of vitamin A, and Czibor (1940) also claimed that the combined administration of vitamins A and D was beneficial in eczema, and even went so far as to suggest vitamins have an anti-allergic action.

In atrophic eczema, besides other allergic conditions, Spector et al. (1943) found a defective absorption of vitamin A, as indicated by an abnormally low increase in the serum after heavy dosing. Similarly, in infants with severe generalised eczema associated with retarded development, lymphadenopathy, and respiratory infections, Sant' Agnese and Larkin (1943) found that the absorption of vitamin A was insufficient.

In spite of some measure of agreement between the above-mentioned workers, Cornbleet et al. (1944) found that in patients with common skin diseases the serum-vitamin-A level was always above the "lower normal limit."

Porter and Godding (1945a) found no abnormality in the dark-adaptation of patients with common skin diseases.

Vitamin A in Rare Skin Diseases.—A third phase of research may be recognised in the recent interest in the significance of secondary or conditioned deficiency of vitamin A in the ætiology of some rare skin diseases, chiefly of hereditary origin.

Darier's disease, in which the essential lesion is a keratosis of the mouth of the follicles, is characterised by firm pin-head-sized confluent papules which soon become crust-covered and later produce vegetating papillomatous growths. The eruptions usually appear on the face and neck and may spread all over the body. Peck et al. (1941, 1943) reported that the serum-vitamin-A level was low. Treatment with massive doses of vitamin A (200,000 I.U. daily) not only increased the serum-vitamin-A level, but also in almost all cases had a favourable clinical effect. They suggested that Darier's disease was due to hereditary or acquired weakness in the absorption of vitamin A, or in the conversion of carotene to vitamin A. In support of this conclusion several other workers (Barwasser 1941, Cannon 1941, Sweitzer 1942, Michelton 1942, Abramovitz 1942) all reported one case each, which usually improved after treatment with vitamin A. The experience of Carleton and Steven (1943), however, was somewhat inconclusive. Dark-adaptation was normal in all cases of Darier's disease at their disposal. The serum-vitamin-A level was low in only one out of four cases, but two improved clinically when given moderately large doses of vitamin A (20,000 I.U.). Pettler (1942) observed no clinical improvement in a case of Darier's disease given massive doses of vitamin A.

Devergie's disease, or pityriasis rubra pilaris, is a chronic exfoliating skin affection in which the papules coalesce to form reddened scaling areas, which spread over parts, or sometimes the entire surface, of the body. The course of the disease is chronic and irregular, with unexpected exacerbations, and there is a tendency for the lesions to become generalised in the form of an exfoliating erythrodermia.

Cures in two patients who were dosed with vitamins A, B, and D were reported by Pettler (1936), and carotene was later found to be effective in one patient (Pettler 1942).

One aged woman was cured by Arquello (1940) with massive doses of vitamin A, but Thomas (1943) obtained no response in an aged man. Brunsting and Sheard (1941) cured defective dark-adaptation in three patients with this disease with daily doses of 150,000 I.U. of vitamin A. The skin was improved in two of their cases, and became stationary in the third. Peck and Chargin (1941) cured one patient of extensive lesions by massive dosing with vitamin A.

The experience of Weiner and Levin (1943) was perplexing; though they successfully treated the skin lesions in five patients by dosing with vitamin A and carotene, they could not before treatment detect any abnormality in the levels of these substances in the blood, nor in dark-adaptation. Cornbleet et al. (1944), however, found that the plasma-vitamin-A level was low in a boy with pityriasis rubra pilaris. In contrast the plasma carotene was high, and they concluded that the problem must be one of incorrect utilisation or transformation of the provitamin rather than of dietary deficiency or defective

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absorption. Porter and Godding (1945b) found in a single patient that dark-adaptation was subnormal and was cured, and the skin lesions considerably improved, by protracted dosing with vitamin A.

In *ichthyosis*, another rare disease, Rapaport et al. (1942) found that the skin lesions were associated with poor dark-adaptation, and that both abnormalities were improved by giving large doses of vitamin A. In agreement with these findings, Peck, Glick, and Chargin (1943) observed that the plasma-vitamin-A level was low in ichthyosis; but, though the serum-vitamin-A level was increased by dosing, the improvement in the skin was hardly outside the usual seasonal fluctuation.

Glazebrook and Tomaszewski (1944) investigated the vitamin-A status in a man with Hodgkin's disease, with severe injury to the liver and general ichthyosiform atrophy of the skin. There was great deterioration in dark-adaptation, and the serum-vitamin-A level was very low. A further indication of abnormality was found in the excretion of small amounts of vitamin A in the urine, from which it is invariably absent in normal subjects.

Primary and Secondary Deficiency of Vitamin A.—The relation of vitamin-A deficiency to skin disease seems therefore to be complex. It seems clear that the follicular lesions may arise from several causes. Thus they occur in hypovitaminosis C (Wiltshire 1919) and in subjects in whom no dietary deficiency might be expected (Stannus 1945). The differential diagnosis of the various causes of follicular lesions, if always possible, is obviously very difficult. Moreover in patients who are cured with vitamin A, particularly in Darier's disease and pityriasis rubra pilaris, we must not neglect the possibility of the spontaneous remissions which are an occasional feature in these diseases.

TABLE I—PLASMA-CAROTENOIDS AND PLASMA-VITAMIN-A LEVELS IN COMMON SKIN DISEASES

Group	No. of cases	Mean values (I.U. per 100 ml.)	
		Carotene	Vitamin A
Eczemas	26	109	126
Pityriasis rosea	5	119	92
Psoriasis	10	151	117
Seborrhœa	11	144	128
Lupus vulgaris	4	214	84
Lichenifications	13	139	123
Acne vulgaris	4	99	119
Rosacea	8	100	122
Skin infections	11	132	119
Alopecia	5	186	114
Pruritus	3	139	128
Verruca	1	84	101
Urticaria pigmentosa	1	55	78
Erythema nodosum	1	170	127
Lymphogranuloma inguinale	1	106	73
Pityriasis lichenoides chronica	1	104	284
Means for above 105 cases		130	120
Keratosis follicularis	6	126	74
Pityriasis rubra pilaris	2	150	97
Ichthyosis	3	105	71
Means for all 116 cases		130	116

TABLE II—PLASMA-CAROTENOIDS AND PLASMA-VITAMIN-A LEVELS IN CONTROLS

"Normal"	41	161	118
Accidents	4	141	78
Fractures	12	102	92
Arthritis	18	145	114
Varicose veins	19	110	123
Herniæ	18	133	110
Hæmorrhoids	4	139	117
All controls	116	139	113

Answers are required to at least three distinct questions: (1) Has it been proved conclusively that in tropical or oriental countries dietary deficiency of vitamin A does in practice cause skin disease? If so, are the diseases ascribed to vitamin-A deficiency due solely to this defect? (2) Are common skin diseases in temperate countries caused or aggravated by dietary deficiency of vitamin A? (3) Can the evidence be accepted which suggests that secondary deficiency of vitamin A, resulting from abnormal metabolism, is an important feature in certain rare skin diseases?

There was no opportunity in the present work to study vitamin A in tropical skin diseases. From the examination of vitamin A and carotene in numerous dermatological subjects in this country, however, we have obtained evidence which may be valuable in answering the second and third of the above questions.

EXPERIMENTAL

Material.—The present paper gives the results of chemical estimations of carotenoids and vitamin A in the blood-plasma of 116 subjects treated for various skin diseases either as private patients or as outpatients at St. Mary's Hospital. Most of the specimens were collected between November, 1944, and March, 1945, but 18 specimens were obtained before this period. In subjects with common skin diseases specimens were usually taken on a single occasion only, but in selected cases of Darier's disease or of pityriasis rubra pilaris serial estimations were made, and the effect of massive doses of vitamin A on the level in the blood was examined. To serve as controls, specimens were collected over the same period from healthy subjects, or from patients suffering from accident, fracture, arthritis, varicose veins, hernia, or hæmorrhoids. Cases involving pregnancy, hypertension, or other conditions believed to affect the blood-vitamin-A level were excluded from the control group.

Methods.—The technique differed only in minor refinements from that of Kimble (1939), as modified by Yudkin (1941) and by ourselves.

The plasma (6 ml.) was shaken with alcohol and petrol ether. Carotenoids were estimated in the extract, after suitable clarification, by their natural yellow colour. The extract was then evaporated, and vitamin A estimated by the blue colour produced on treatment with antimony trichloride, an allowance being made for the colour contributed by carotenoids to this reaction. Both yellow and blue colours were measured in a photoelectric absorptiometer provided with suitable filters.

In calibrating this instrument against a specimen of vitamin-A acetate a conversion factor of 1600 between $E\,\frac{1\%}{1\,cm.}$ 328 mμ and I.U. of vitamin A per g. was assumed. The calibration for carotenoids was against the international standard solution of β-carotene, and for convenience results have been expressed as though all the carotenoids of the plasma were β-carotene. Owing to the presence of xanthophyll, α-carotene, &c., the actual "biological value" of the carotenoid fractions was presumably somewhat less than the figures given.

Results.—The mean values for plasma carotenoids and vitamin A in various skin diseases are given in table I. For all types of skin disease combined, the average values were 130 I.U. for carotenoids and 116 I.U. for vitamin A. These figures are almost identical with the corresponding means of 139 and 113 I.U. found for the controls (table II).

In agreement with general experience the individual values for carotenoids and vitamin A varied over a wide range in both the dermatological and control subjects. If, however, we fix arbitrary limits of 0–80 I.U. as indicating low values for either carotenoids or vitamin A, 81–160 I.U. as indicating medium values, and over 161 I.U. as indicating high values, there again appears to be little difference between the two series. The percentages of cases falling within these limits were as follows:

		Percentage of cases		
		Low	Medium	High
Carotenoids	Skin disease	21	55	24
	Controls	16	54	30
Vitamin A	Skin disease	22	63	15
	Controls	22	65	13

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Since secondary deficiency of vitamin A has been reported in Darier's disease, pityriasis rubra pilaris, and ichthyosis, our data for patients with these diseases are summarised in table III. Mean values are given for all the specimens of plasma collected from each subject while still uninfluenced by vitamin-A therapy. Other columns give the lowest recorded values found without vitamin-A therapy, and the highest values found after massive doses of 100,000–240,000 I.U. of vitamin A had been given over prolonged periods.

TABLE III—PLASMA-CAROTENOIDS AND PLASMA-VITAMIN-A LEVELS IN CERTAIN RARE SKIN DISEASES

Disease	Case	Age (yrs)	Sex	Before dosing				After dosing
				Mean values		Lowest values		Highest value of vitamin A
				Carotenoids	Vitamin A	Carotenoids	Vitamin A	
Darier's disease ..	1	13	M	102	78	100	55	556
	2	33	F	171	92	59	55	..
	3	61	F	215	57	199	20	687
	4	31	M	90	57	57	7	790
	5	53	F	62	55	61	28	1846
	6	19	F	113	106	95	103	..
		Means..		126	74	95	45	970
Pityriasis rubra pilaris	7	14	M	41	48	31	46	408
	8	41	F	158	145	110	66	690
		Means..		100	97	71	56	549
Ichthyosis ..	9	28	M	98	86	77	80	..
	10	13	F	72	72	65	49	..
	11	32	F	145	55	145	55	..
		Means..		105	71	96	61	..
Combined means ..				116	77	91	51	830

Our findings indicate that the plasma-vitamin-A level is often, but not invariably, low in these diseases. In comparison with the mean value of 116 I.U. found in the controls, the mean for Darier's disease was 74 I.U., for pityriasis rubra pilaris 97 I.U., and for ichthyosis 71 I.U. For all 11 patients the mean was 77 I.U., as against 113 I.U. for the controls. In only one instance was a mean value obtained which exceeded the mean value for the controls. Eight cases at one time or another gave values which were less than half the average for the controls.

In subjects given massive doses of vitamin A the plasma-vitamin-A level always rose eventually to very high levels, in one instance (case 5) reaching nearly 2000 I.U. In each subject the values after dosing fluctuated considerably. This may have been due in part to difficulty in ensuring that the specimens should be collected at a constant interval of five hours after dosing, which was intended to coincide to the point of maximal absorption of the vitamin into the blood-stream.

In case 7, a boy with severe pityriasis rubra pilaris, the plasma-vitamin-A level did not respond normally to massive doses of vitamin A during the early stages of therapy. Thus after two months' treatment with up to 150,000 I.U. daily of vitamin A the plasma-vitamin-A level was only 82 I.U. In contrast to the experience of Cornbleet et al. (1944), the plasma carotenoids were also consistently low and, during eighteen months' observation, had a mean value of only 71 I.U. In this patient the galactose tolerance, serum-choline esterase, and hippuric-acid tests indicated impairment of liver function, which was probably the cause of the poor response of the plasma-vitamin-A level to dosing.

The fall of the plasma-vitamin-A level after the discontinuance of massive dosing with vitamin A was studied in case 5 with Darier's disease and in one normal subject. In each case there was a rapid decrease during the day after the last dose, which was followed by a slower decline to a constant level slightly above the mean value for the controls. Thus case 5 gave a value of 522 I.U. at five hours after her last dose, 200 I.U. after twenty-four hours, 135 I.U. after three days, and 118 I.U. after three weeks. The control had 1120 I.U. at five hours after dosing, 156 I.U. after thirty hours, 131 I.U. after a week, and 126 I.U. after two weeks. Too much importance need not be attached to the difference shown by the two subjects at five hours after dosing, because the rate of change in the plasma-vitamin-A level at this point is obviously very rapid. On several other occasions case 5 gave values of over 1000 I.U.

The clinical course after dosing with vitamin A in Darier's disease and pityriasis rubra pilaris varied in different patients. The vitamin therapy was combined with treatment with Grenz rays, and any improvement for which the vitamin might have been responsible was assessed by the inspection of areas of skin not exposed to the rays. In two young patients with Darier's disease dosing with vitamin A was followed by complete or nearly complete recovery. In other subjects such progress as was observed might well have been due to spontaneous remissions. Case 5, in whom the highest plasma-vitamin-A level was found after dosing, did not show any clinical response to therapy. The two cases of pityriasis rubra pilaris both improved during dosing with vitamin A, but neither was entirely cured. No cases of ichthyosis were treated.

Some of the above-mentioned cases were demonstrated at the Royal Society of Medicine (Leitner 1946, Moore 1946) and all are still under observation.

DISCUSSION

The results of our investigation do not favour the view that vitamin-A deficiency is prominent in common skin diseases in this country. Our failure to detect any difference in vitamin-A status between groups of dermatological and control subjects is in agreement with the recent conclusions of Cornbleet et al. (1944) and of Porter and Godding (1945a) and in contrast with the claims of many earlier workers.

As regards Darier's disease, pityriasis rubra pilaris, and ichthyosis our data give limited support to the conclusion that secondary deficiency of vitamin A may be a significant factor. It must be emphasised that in none of these diseases have we observed vitamin-A values consistently under 40 I.U., which is the level below which there is danger of functional deficiency of vitamin A, as indicated by gross impairment of dark-adaptation (Medical Research Council 1945). We have, however, occasionally obtained values below this level in three cases of Darier's disease. In two other patients the lowest observed values were under 50 I.U., and in three more under 60 I.U. Wide variations were usually found, however, both between patients with the same disease and between successive estimations in the same subject. Thus case 7, with severe pityriasis rubra pilaris, gave low values for the plasma-vitamin-A level. His mother, however, who had the same disease, but in less active form at the time, gave a mean value above the average for the controls. Similarly, case 6, in contrast to the other patients with Darier's disease, never showed a low plasma-vitamin-A level. It may be significant that her lesions were unusually mild. The degree of individual variation may be illustrated by case 4, whose plasma-vitamin-A level varied on different occasions between 7 and 93 I.U. Except in case 7, we found no evidence of any lack of absorption of vitamin A from the intestines, as indicated by its increase in the plasma after the ingestion of massive doses.

Our observation that the plasma-vitamin-A level is often low, but sometimes normal, in the diseases in question may explain the diversity of opinion of previous workers on this point. Factors which might be expected to cause variations between different subjects are the severity of the disease and the degree of injury to the

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liver. In individual subjects the extent of the skin lesions may often be subject to intermittent exacerbations and remissions, which may depend on factors such as season, diet, and endocrine activity, and may well be accompanied by corresponding changes in the plasma-vitamin-A level.

Finally two points may be emphasised. First, it must not be assumed that, if vitamin-A deficiency is of little importance in this country as a cause of the commoner skin diseases, the same conclusion can necessarily be applied to all other vitamins. The possible significance of vitamin C, for example, remains an open problem. Secondly, it must be understood that, when massive doses of vitamin A are given, of the order of 200,000 I.U., compared with the minimal curative dose of 1250 I.U. (Medical Research Council 1945), the vitamin is temporarily carried in the plasma in amounts greatly in excess of the normal physiological level. This "supercharging," in which the rate of intake of the vitamin outstrips the power of the liver to absorb the excess from the plasma, may well lead to the appearance of the vitamin in tissues from which it is usually absent, or from which it has been excluded by the disease. Massive dosing with vitamin A, therefore, may in some circumstances have therapeutical effects not conferred by mere dietary sufficiency.

SUMMARY

In an examination of plasma-vitamin-A levels in patients with miscellaneous skin diseases, no support was found for the theory that vitamin-A deficiency is of general significance in common types of skin disease in this country. The mean of 116 I.U. per 100 ml. found in 116 dermatological cases was virtually identical with the mean of 113 I.U. found in 116 controls.

Limited support was found for the theory that secondary deficiency of vitamin A may be of some significance in certain rare skin disease. In 11 cases of Darier's disease, pityriasis rubra pilaris, or ichthyosis the mean plasma-vitamin-A level was 77 I.U. Most of the patients gave very low values at one time or another, but there were some exceptions. Irregularity of the plasma-vitamin-A level in individual subjects, possibly caused by periodical exacerbations and remissions in the disease, may explain the diversity of opinion among previous workers about the reality of the fall in plasma-vitamin-A level.

In all patients with Darier's disease or pityriasis rubra pilaris given massive doses of vitamin-A concentrate the plasma-vitamin-A level rose eventually to values much above normal. In one case of pityriasis, however, the plasma-vitamin-A level did not respond until dosing had been continued daily for over two months. The possibility of interference in vitamin-A metabolism through impairment of liver function in these diseases must be borne in mind.

In two cases of Darier's disease the skin became normal, or almost normal, after treatment with vitamin A and Grenz rays. Other cases of Darier's disease showed less improvement, and in one patient the lesions were unchanged even though the plasma-vitamin-A level rose very high. Two cases of pityriasis rubra pilaris improved but remained abnormal.

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REFERENCES

Abramovitz, W. E. (1942) *Arch. Derm. Syph., Chicago*, **45**, 976.
Arquello, R. A. (1940) *Rev. argent. Dermatosif.* **24**, 549.
Aykroyd, W. R., Rajagopal, K. (1936) *Indian J. med. Res.* **24**, 419.
— Krishnan, B. G. (1937) *Ibid*, **24**, 707.
Brawasser, N. C. (1941) *Arch. Derm. Syph., Chicago*, **44**, 961.

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STABILISATION OF PENICILLIN SOLUTIONS WITH PHOSPHATE

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THIS paper describes the stabilising effect of phosphate on the rate of destruction of penicillin by heat. It is shown that the rate of destruction depends on the concentration of the penicillin and of the phosphate; that samples of different manufacture behave differently, both in their rate of destruction and in the effect on this of the concentration of penicillin and of phosphate; and that the effect is not due to control of pH but to a specific action of the phosphate ion.

These observations arose from experiments performed by one of us (R. J. V. P.) with the assistance of Dr. Grosevitz, of the department of bacteriology, Hebrew University, Jerusalem, at No. 16 British General Hospital. It was considered possible that penicillin might act on the medium and not on the organism directly. If penicillin combined with or changed a component of the medium essential to bacterial life, the observed antibacterial phenomena might be explained.

To investigate this possibility, penicillin was dissolved in distilled water and in culture media of the same pH. On autoclaving for various periods, complete destruction was observed with water, whereas residual antibacterial activity persisted with broth, a result which gave some support to the hypothesis.

A semi-synthetic medium was then obtained from Dr. Grosevitz; it contained casein hydrolysate, tryptophane, nicotinic acid, aneurine, NaCl, $MgSO_4$, $FeSO_4$, and Sørensen's phosphate buffer. Penicillin, dissolved

References continued

Bloch, C. E. (1921) *J. Hyg., Camb.* **19**, 283.
Brunsting, L. A., Sheard, C. (1941) *Arch. Derm. Syph., Chicago*, **43**, 42.
Cannon, B. A. (1941) *Ibid*, **44**, 1163.
Carleton, A., Steven, D. M. (1943) *Ibid*, **48**, 143.
Cornbleet, T., Popper, H., Steigmann, F. (1944) *Ibid*, **49**, 103.
Czibor, P. (1940) *Orvostud. Közl.* **1**, 247.
Frazier, C. N., Hu, C. K. (1931) *Arch. intern. Med.* **48**, 507.
Glazebrook, A. J., Tomaszewski, W. (1944) *Arch. Derm. Syph., Chicago*, **50**, 85.
Goodwin, G. P. (1934) *Brit. med. J.* ii, 113.
de Gouvêa, H. (1883) *v. Graefes Arch. Ophthal.* **29**, 167.
Gross, P. (1941) *Arch. Derm. Syph., Chicago*, **44**, 1060.
Kimble, M. S. (1939) *J. Lab. clin. Med.* **24**, 1055.
Lehman, E., Rapaport, H. G. (1940) *J. Amer. med. Ass.* **114**, 386.
Leitner, Z. A. (1945) *Proc. R. Soc. Med.* **38**, 341.
— (1946) *Brit. J. Derm. Syph.* **58**, 11.
Loewenthal, L. J. A. (1933) *Arch. Derm. Syph., Chicago*, **28**, 700.
Mackay, H. M. M. (1934) *Arch. Dis. Childh.* **9**, 133.
Marchionini, A., Patel, C. (1937) *Arch. Derm. Syph., Wien*, **175**, 419.
Medical Research Council (1945) see *Nature, Lond.* **156**, 11.
Michelson, H. E. (1942) *Arch. Derm. Syph., Chicago*, **45**, 628.
Moore, D. F. (1940) *J. trop. Med. (Hyg.)*, **43**, 190.
Moore, T. (1946) *Brit. J. Derm. Syph.* **58**, 17.
Mori, M. (1904) *Jb. Kinderheilk.* **59**, 175.
Nicholls, L. (1933) *Indian Med. Gaz.* **68**, 681.
Peck, S. M., Chargin, L. (1941) *Arch. Derm. Syph., Chicago*, **44**, 722.
— — Sobotka, H. (1941) *Ibid*, **43**, 223.
— Glick, A. W., Chargin, L. (1943) *Ibid*, **48**, 32.
— — Sobotka, H., Chargin, L. (1943) *Ibid*, p. 17.
Pettler, M. F. (1936) *Penn. med. J.* **39**, 864.
— (1942) *Ibid*, **45**, 604.
Pillat, A. (1929) *Arch. Ophthal., N.Y.* **2**, 256.
Porter, A., Godding, E. W. (1945a) *Brit. med. J.* i, 840.
— — — (1945b) *Brit. J. Derm. Syph.* **57**, 197.
Rao, M. V. R. (1937) *Indian J. med. Res.* **24**, 727; **25**, 39.
Rapaport, H. G., Herman, H., Lehman, E. (1942) *J. Pediat.* **21**, 733.
Sant'Agnese, P. A. di, Larkin, V. deP. (1943) *Proc. Soc. exp. Biol., N.Y.* **52**, 343.
Schneider, E., Widder, M. (1938) *Arch. Derm. Syph., Wien*, **178**, 168.
Spector, S., McKhann, C. F., Meserve, E. R. (1943) *Amer. J. Dis. Child.* **66**, 376.
Stannus, H. S. (1945) *Proc. R. Soc. Med.* **38**, 337.
Sweitzer, S. E. (1942) *Arch. Derm. Syph., Chicago*, **45**, 628.
Thomas, E. W. P. (1943) *Proc. R. Soc. Med.* **36**, 298.
Weiner, A. L., Levin, A. A. (1943) *Arch. Derm. Syph., Chicago*, **48**, 288.
Wiltshire, H. (1919) *Lancet*, ii, 564.
Youmans, J. B., Corlette, M. B. (1938) *Amer. J. med. Sci.* **195**, 644.
Yudkin, S. (1941) *Biochem. J.* **35**, 551.

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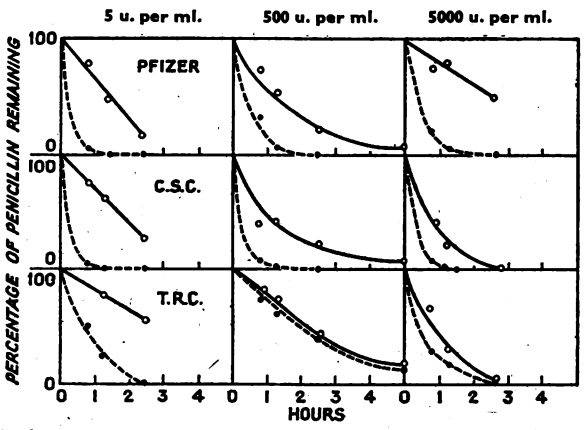

Fig. 1—Rate of destruction of penicillin at 100° C: solid line, in phosphate *M*/15; broken line, in water. Each point represents the average result of at least three experiments.

in this medium and autoclaved, maintained some of its antibacterial properties.

Each component was then tested separately; destruction of penicillin was complete with each, except the phosphate buffer and possibly aneurine. These results were further studied by us. The results with aneurine were not confirmed. On the other hand, the stability of penicillin in the presence of phosphate was confirmed.

METHOD

Three samples of penicillin were tested: (1) Pfizer manufacture, 750 units per mg.; (2) C.S.C. manufacture, 300 units per mg.; and (3) T.R.C. manufacture, 45 units per mg. These products therefore contained different amounts of unknown impurities; in sample (3) these included a fair amount of buffering agents. There is no proof that the antibacterial agents in the three products were identical.

Titration of penicillin activity was performed by the technique of doubling dilutions in the following medium:

Peptone (Evans Sons Lescher and Webb)	2·0%
NaCl	0·8%
Glucose	2·0%
Andraade's indicator	

Adjusted to pH 7·6

The doubling dilution was carried out in ten or twelve tubes, which were then inoculated with one drop of a saline suspension of *Staph. aureus* (Oxford). The suspension was of an 18-hour agar-slope culture. The end-point was taken as the first tube in which growth took place and turned the indicator red. The age of the culture and the exact composition of the medium are most important for obtaining reproducible results. Titrations by this technique were frequently checked by the plate-ring method.

Tests on the effect of heat were all carried out at pH 7·0, either in Sørensen's phosphate buffer mixture or in distilled water. The pH of even freshly distilled water varies considerably; it is usually acid, but different samples for use in making up penicillin solutions, taken from different laboratories, had pH values varying from 5·5 to 9·5. All samples used in the experiments described below were adjusted to pH 7·0 after a short period of boiling.

Most of the experiments were carried out at 100° C in a constant-level water-bath. In certain tests phenol red was added as an indicator to detect changes in pH. The pH remained constant with all buffered solutions, including the most dilute; with distilled water the pH sometimes rose slightly but never more than 0·2 unit. The solutions were always heated in containers of non-soluble glass.

RESULTS

Destruction of Penicillin at 100° C in Water and in Phosphate.—A buffer concentration of *M*/15 was arbitrarily selected for these experiments. The rate of destruction of solutions of penicillin of different concentrations is shown in fig. 1. It will be seen that, in distilled water, the rate of destruction depended on the sample of penicillin and on its concentration. The Pfizer sample was slightly more stable at higher concentrations, the C.S.C. sample equally stable at all concentrations, and the T.R.C. sample much more stable at intermediate concentrations.

In phosphate solutions all samples and all concentrations showed increased stability, the degree of destruction again depending on the sample and its concentration. At 5 units per ml. the T.R.C. sample was most stabilised, and the Pfizer and C.S.C. samples were less so and equally. At 5000 units per ml. the Pfizer sample was most stabilised, and the C.S.C. and T.R.C. samples were less so and equally.

Effect on Stability at 100° C of Various Concentrations of Phosphate.—The results, summarised in fig. 2, show that, though the pH was 7·0 in all instances, the effect of variations in the concentrations of phosphate differed considerably with the different samples. In the Pfizer and T.R.C. samples there was an optimal concentration, above and below which there was greater destruction of penicillin. In the C.S.C. sample the optimal concentration was not reached, all concentrations below the highest tested showing greater destruction. The optimal concentration of phosphate for each sample was as follows:

Sample	*5 u./ml.*	*5000 u./ml.*
Pfizer	*M*/13	*M*/30
C.S.C.	>*M*/3	>*M*/3
T.R.C.	*M*/100	*M*/100

Experiments with other salts showed that the effect was not produced with any of the following ions: K, Na, Mg, SO_4, Cl. The stabilisation by phosphates, therefore, is not due to its control of the pH and is a specific action of the PO_4 ion. The stabilisation originally

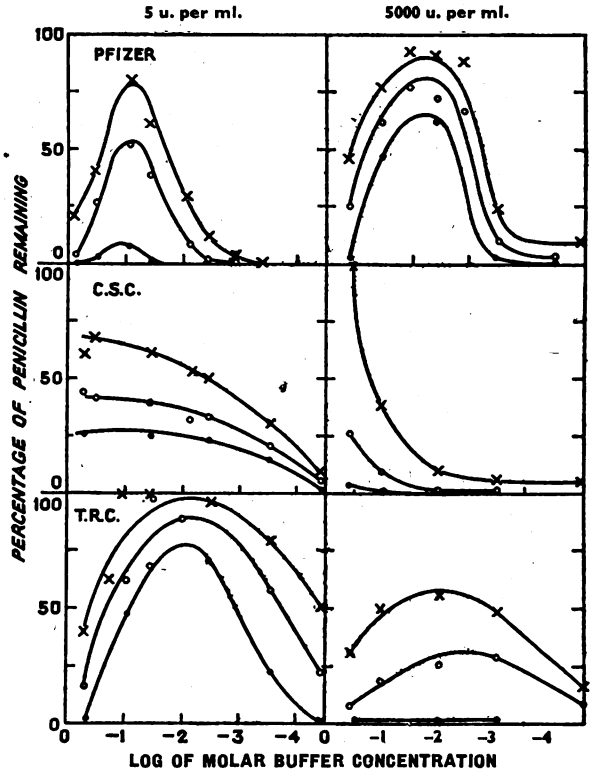

Fig. 2—Effect of phosphate concentration on stability of penicillin at 100° C. Curves represent amount of penicillin remaining after solution has been kept at 100° C for different times: X, 50 min.; O, 75 min.; ●, 150 min. Each point represents the average result of at least three experiments.

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observed with culture media is probably to be explained by the phosphates contained in them.

Other Results.—(1) It has been suggested that *glucose* increases the rate of destruction of penicillin in solution. This would be surprising, since glucose solutions are slightly acid, and penicillin is more stable in acid solutions. Experiment confirmed this supposition; penicillin in 5% glucose, with a pH of about 5·0, was slightly more stable than the same solution with the pH adjusted to 7·0 with soda. With phosphate buffer at pH 7·0 the rate of destruction was greatly reduced; the rate of destruction at pH 7·0, in the presence or absence of phosphate, was the same in these experiments as in those without the addition of glucose. Glucose as such is therefore without effect on penicillin.

(2) Certain samples of synthetic *rubber* destroy penicillin. It was found in one experiment that, at 37° C, 80% was destroyed in water after three days, whereas only 30% was destroyed in the presence of *M*/15 phosphate. This preservation, however, did not always take place. For example, if the rubber tube was cut into small pieces, thereby greatly increasing the surface of rubber in contact with the penicillin, no preservation was observed.

(3) At 37° C the rate of destruction of penicillin is very slow. Nevertheless, it was possible to show, in dilute solutions, an increase of stability in the presence of phosphate, though it was not so great as at 100° C.

DESTRUCTION OF PENICILLIN AT 100° C IN PHOSPHATE AND IN WATER (% DESTROYED AFTER 10 MINUTES, BY INTRAPOLATION FROM FIG. 1)

Sample	5 u./ml.		500 u./ml.		5000 u./ml.	
	Water	Buffer	Water	Buffer	Water	Buffer
Pfizer ..	35	5	25	5	30	3
C.S.C. ..	40	3	50	15	40	10
T.R.C...	15	3	5	5	15	5

PRACTICAL APPLICATIONS

The stability of samples of penicillin as now manufactured is much higher than previously thought, and even at 37° C destruction is comparatively slow. Nevertheless, the addition of phosphate, especially to dilute solutions such as are used for local application, makes it possible to preserve the potency of the penicillin for long periods at room temperature—i.e., without having to keep the solution in the refrigerator.

The fact that phosphate reduces the rate of destruction of penicillin by rubber may also be of some practical value. Penicillin solutions may be in contact with rubber for a considerable period in apparatus used for continuous parenteral administration, and the addition of phosphate may decrease the loss of activity of the penicillin.

In our view, however, the most important application of our findings is the possibility of sterilising solutions of penicillin with minimal loss of activity. Certain organisms, notably *Ps. pyocyanea*, are apt to grow in solutions of penicillin kept for a short time, even in the refrigerator. We have carried out tests which show that it is possible completely to sterilise solutions of penicillin, heavily infected with *Ps. pyocyanea*, by boiling for ten minutes. By intrapolation from fig. 1, it can be shown that, in this time, there is only very slight loss of activity if phosphate is present (see table).

SUMMARY

Phosphate stabilises penicillin solutions at 100° C to a considerable extent.

The degree of stabilisation and the optimal concentration of phosphate depend on the sample of penicillin. They do not depend on the amount but presumably on the nature of the impurities present in these samples.

It is possible to sterilise solutions of penicillin by boiling in the presence of phosphate, with only very small loss of activity.

Phosphate appears to decrease the rate of destruction of penicillin by some samples of synthetic rubber.

A SYNDROME SIMULATING ACUTE ABDOMINAL DISEASE

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THE purpose of this article is to describe a series of cases which at first appeared to be acute abdominal conditions. The patients were European Servicemen in a military hospital in West Africa. Careful clinical analysis of the first few cases showed that the signs did not correspond to those of the usual abdominal emergencies. Without surgical interference the illness almost always subsided. We soon learned to recognise the features of what we think is a new syndrome, and spontaneous improvement in some cases justified the diagnosis. The cases were investigated, and the results are tabulated below. Some of the more illustrative cases are described in detail.

TYPICAL CASE-RECORDS

CASE 1.—Male, aged 20. This was the first case of the series. He was sent into hospital with a diagnosis of acute cholecystitis. He had severe pain in the right upper abdomen and the right shoulder, which came on in the course of a few hours. Rigidity and tenderness were present in the right upper abdomen; the rigidity was extreme, the tenderness only moderate. The temperature was 100° F, the pulse-rate 80 per min., and the respirations were 20 per min. No other physical signs were found.

The diagnosis rested between perforated peptic ulcer and pleuropneumonia. The gradual onset and the pyrexia did not support the former diagnosis, and there were no signs of the latter. We felt justified in waiting a few hours, and by then a remarkable improvement had occurred; pain, pyrexia, and physical signs were rapidly subsiding. Twenty-four hours after admission his condition was almost normal. On the 3rd day he had a slight recurrence of pyrexia, which subsided in 24 hours. Radiography in the early stages showed normal lung fields, but the right diaphragm moved less than the left; the gall-bladder was radiologically normal. No malarial parasites were found in the blood.

CASE 2.—Male, aged 35, sent into hospital with a diagnosis of perforated duodenal ulcer. Several hours previously he had been gradually overcome by very severe pain in the right upper abdomen, the right side of the neck, and the right shoulder. The pain was still present on admission, with great pain, rigidity, and tenderness in the right upper abdomen. Immediate radiography showed normal lung fields, but the respiratory excursion was limited on the right side. Considerable hyperalgesia to pinprick was present over the right subcostal region, the right side of the neck, and the right shoulder. Within 10 hours he had so much improved that there was now no question of an acute abdominal emergency, and within 2 days he had recovered. Undoubtedly we would have operated on this man if we had not previously seen case 1, because the resemblance to a case of perforated ulcer was striking. However, immediate radiography had shown no sign of gas beneath the diaphragm.

CASE 4.—Male, aged 19, rescued unconscious from a swimming-bath and sent to hospital as half-drowned. Two days previously he had complained of pain radiating up the chest on both sides of the sternum. This had been severe enough to keep him awake, but his medical officer could find nothing abnormal in the chest. Two days later he felt well enough to bathe. In the water he became unconscious and

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after his rescue artificial respiration was given because he was thought to be half-drowned. As he recovered he repeatedly clutched at his abdomen as though in great pain, and it was noted that generalised abdominal rigidity and tenderness were present. In hospital shortly afterwards he showed considerable general abdominal rigidity and moderate tenderness, most marked over the whole of the right side of the abdomen, but especially in the right upper quadrant. The temperature was 98° F, the pulse-rate 82 per min., and the respirations 24 per min. There were no other physical signs, except restricted chest movement.

The diagnosis of perforation was so strongly suggested that it was only after very careful consideration that we decided to watch his progress. During the next 10 hours he improved so rapidly that he was able to sit up and read, and the physical signs regressed correspondingly. The temperature was now 99° F, the pulse-rate 72 per min., and the respirations 18 per min. Convalescence was uneventful. Investigation showed a white-cell count of 10,000 per c.mm.: 75% polymorphs. The cerebrospinal fluid was normal. Radiography of the chest was normal.

CASE 11.—Male, aged 32, sent in with a diagnosis of perforated duodenal ulcer. For several months previously he had suffered from boils, and for several years there had been occasional pain in the right iliac fossa, suggesting chronic appendicitis. For 19 hours before admission he had gradually increasing pain to the right of the umbilicus. On admission the temperature was 99° F, the pulse-rate 100 per min., and the respirations 20 per min. Severe pain and almost board-like rigidity, with moderate tenderness, were present over the whole of the right abdomen and flank. There was no hyperalgesia, and liver dullness was normal.

We thought that this case was identical with the others of the series. Three hours later the pain was less, and the patient was asleep; but the temperature had risen to 102·6° F, and rigidity and tenderness were present only in the right iliac fossa. In view of the history suggesting chronic appendicitis, exploration was considered essential. Operation revealed no adequate cause for the severe abdominal symptoms. The appendix was removed. It lay in the pelvis and showed chronic fibrosis, with no sign of acute inflammation. Seven hours after the operation the temperature was 99·4° F, the pulse-rate 88, and respirations 20 per min. There was hardly any abdominal pain. The white-cell count was 17,500 per c.mm.: 78% polymorphs. Recovery was uneventful, except for pyrexia and slight right upper abdominal pain, lasting a few hours on the 2nd and 5th days after the operation.

FEATURES OF THE SYNDROME

(1) Gradual onset of symptoms, rising to a peak in a few hours. (2) Pain in the right upper abdominal quadrant, sometimes spreading to the whole of the right side of the abdomen and loin. (3) Considerable rigidity with relatively less tenderness in the same areas

Case	Age (yr.)	Diagnosis before admission	Symptoms before and on admission	Signs and symptoms on admission	Results of investigations*	Progress
1†	20	Acute cholecystitis	Pain developed in 6 hr. in rt hypochondrium and rt shoulder	T. 100° F, P. 80, R. 20, extreme rigidity in rt upper abdominal quadrant	Cholecystogram normal	Signs and symptoms almost disappeared in a few hours, and recovery in 5 days
2†	35	Perforated duodenal ulcer	Severe pain in rt side of abdomen and rt shoulder developed in 7 hr.	Rigidity and tenderness in rt upper abdominal quadrant; rt shoulder very painful	Sputum normal	Rapid improvement in 10 hr. and recovery in 8 days
3†	25	No diagnosis	Severe pain in rt chest radiating to rt shoulder and then to rt upper abdominal quadrant	T. 99° F, P. 88, tenderness in rt upper abdominal quadrant	..	Recovery in 5 days
4†	19	Half-drowned	2 days' pain in lower chest, sudden onset of severe general abdominal pain	T. 98° F, P. 82, R. 24, rigidity and tenderness in rt upper abdominal quadrant	Cerebrospinal fluid normal, white-cell count 10,000 per c.mm. No pathogenic organisms in stools	Improved in 5 hr. Recovered in 6 days
5	29	Malaria or chest condition	No history of boils; 9 hr. pain in rt lower ribs and upper abdomen	T. 101° F, P. 98, R. 28, tenderness and rigidity in rt upper abdominal quadrant	..	Recovery in 48 hr.
6	39	? Gastric ulcer	Boils for 9 weeks. Previous similar abdominal attack a few weeks before. Pain for 48 hr.	T. 98·4° F, rigidity of rt upper abdominal quadrant	..	Rapid recovery in 9 hr.
7	40	Acute perforated appendix	48 hr. malaise, 6 hr. epigastric pain, no boils	T. 102·8° F, P. 104, rigidity and tenderness of rt upper abdominal quadrant	..	Improved in 12 hr. Relapsed on 5th day. Recovery in 7 days
8	26	? Hepatitis	Boils for a few weeks, 15 hr. pain in rt upper abdomen and in back	T. 101° F, P. 90, boils over sacrum, rigidity and tenderness in rt upper abdominal quadrant	Hæmolytic *Staph. aureus* grown from pus	At first improved, later rt perinephric abscess evacuated
9	25	? Pleurisy ? Cholecystitis	No boils, 30 hr. abdominal pain becoming localised in rt upper quadrant	T. 100° F, P. 80, rigidity, tenderness, and hyperalgesia in rt upper abdominal quadrant	Cholecystogram normal, no pathogenic organisms found in fæces	Later had transient pain in shoulder and chest, and pain in loin. Recovery in 4 days
10	21	No diagnosis	No boils, 9 days' pain in rt upper abdominal quadrant with pyrexia	T. 101° F, P. 90, rigidity and tenderness in rt upper abdominal quadrant	White-cell count 12,300 per c.mm. (polymorphs 74%), cholecystogram and fæces normal	Rigidity and tenderness moved to rt loin. Recovery in 6 days
11	32	Perforated duodenal ulcer	19 hr. abdominal pain, recent boils	T. 99° F, P. 100, R. 20, board-like rigidity and tenderness in rt upper abdomen and flank	White-cell count 17,000 per c.mm. (polymorphs 78%), cholecystogram and fæces normal	3 hr. later T. 102·6° F, nothing abnormal found at operation, uneventful recovery
13	..	Perforated duodenal ulcer	Sudden onset of severe abdominal pain (the only case in which the onset was sudden), bilateral meatal furunculosis	T. 96·8° F, P. 80, board-like rigidity and moderate tenderness in rt upper abdominal quadrant	Cholecystogram and fæces normal	Rapid recovery in 5 hr.

* In every case the following investigations were carried out, with the results as stated:
Urine: No abnormal constituents, culture sterile.
Radiography of chest: Lung fields normal; in some cases movement of rt diaphragm was restricted.
Blood film: No malaria parasites found in repeated examinations.

† History of boils not inquired into. Case 12 was not included in the table as detailed notes were lost (see text).

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as the pain. (4) There is usually diminished movement of the right side of the chest and diaphragm, sometimes associated with shoulder pain. (5) There may be a rapid change in the symptoms and signs and particularly a change in the situation of pain and rigidity. (6) Spontaneous rapid improvement in most cases.

DIFFERENTIAL DIAGNOSIS

Acute Surgical Conditions

In our cases, when observation was justifiable, the rapid improvement excluded a surgical emergency; but when first seen a difficult problem was presented.

(1) *Perforated peptic ulcer* was excluded because the onset was gradual, often with pyrexia; liver dullness was not impaired; and subphrenic gas was not shown radiologically.

(2) *Appendicitis* was excluded because the signs were as a rule most prominent in the right upper abdominal quadrant, and the usual sequence of appendicitis symptoms—i.e., umbilical pain, nausea or vomiting, followed by pain in the right iliac fossa—was never seen.

(3) *Gall-bladder disease* and *acute pancreatitis* were excluded because these diseases are uncommon in persons of military age, there was no previous history suggesting gall-stones, and cholecystograms were subsequently negative.

Tropical Diseases

(1) *Malaria.*—In every case repeated blood examination failed to find the malarial parasite.

(2) *Amœbic hepatitis.*—The course of the illness and the failure to find amœbæ in the stools excluded this disease.

Other Medical Conditions

(1) *Acute lung disease.*—Clinical and radiological signs of chest disease were absent.

(2) Unusual *virus disease of the cord.*—Speedy recovery excluded this possibility, and the cerebrospinal fluid in case 4 showed no abnormality.

(3) *Infective hepatitis.*—Jaundice was absent and the liver was not enlarged.

DISCUSSION

Reference to cases 1, 2, 3, and 9 (see table) shows that the abdominal symptoms were accompanied by shoulder pain, and this suggests a lesion in relation to the diaphragm. Investigations excluded chest disease and all likely causes below the diaphragm, and we could not think of an explanation. At this point we saw the following case, which provided a hypothesis.

CASE 8.—Male, aged 26. On May 18 he complained of general malaise. Two days later he had right subcostal pain, and his temperature was 101·4° F. Next day he was admitted to hospital. His temperature was 101·4° F and his pulse-rate 90 per min. Right subcostal pain and tenderness were present. Corresponding rigidity was present, without hyperalgesia. There was some pain on pressure in the loin. At this stage we considered that the patient fell into the same group as the rest of the series.

On the 22nd the symptoms and signs improved, but the temperature rose to 103° F. During the next week his condition slightly improved, but pain persisted. Investigations showed a white-cell count of 21,000 per c.mm., normal urine, and sterile blood-culture. As the pyrexia continued, sulphathiazole 9 g. was given. Soon afterwards rigidity disappeared, and on June 7 a hard knobbly mass could be felt in the position of the right kidney. A diagnosis of perinephric abscess or renal carbuncle was supported by (*a*) slight scoliosis with concavity to the right; (*b*) absence of the right psoas shadow on radiography; and (*c*) defective filling of the lower calyces of the right kidney in an intravenous pyelogram.

On the 10th the right kidney was exposed by Mayo's incision. Zuckerkandl's fascia was incised, and there was a small gush of pus, which culture showed to contain a pure growth of *Staph. aureus.* This fascia and the perinephric fat were fused into a cardboard-like mass, in which a window was cut to expose the lower half of the kidney. The kidney was found to be fixed by strong adhesions into this diseased perinephric fat. The wound was sewn up with a large drain to the perinephric space. A few days after the operation discharge of pus became profuse and grew the same organism as before in pure culture. Recovery was uneventful. Histological examination of the excised tissue showed "great thickness of collagen fibres interspersed with numerous fibroblasts: there were numerous foci of small cells, with a few polymorphs suggesting multiple early abscess formation."

Clearly this was a case of staphylococcal disease of the perinephric fat. Similar cases have been described by Ryle (1936) among others. This case suggested to us the possibility that staphylococcal perinephric infection was the underlying cause in all our series, though not usually reaching the stage of abscess formation. The argument in favour of this view is as follows. Staphylococcal disease affecting the subcutaneous tissue ranges in severity from a pimple to a carbuncle. It is usually subacute, with an indolent spread, tending to resolve spontaneously. These features are reflected in our cases: sometimes there is a history of boils (cases 6, 8, 11, and 13) and usually a preliminary period of malaise which would correspond to the subacute development of the infection in the relatively silent area of the perinephric fat (cases 4, 6, 7, and 10). The range of severity of staphylococcal infection corresponds to the range shown by our series, which extends from the high temperature and long course in cases 7 and 10 to the rapid improvement of cases 3, 6, 9, and 13. Spontaneous resolution is shown by all the cases except case 8. This tendency is also well illustrated by case 12, full particulars of which cannot be included in our table because the notes were lost. The patient was seen a year before the other cases and showed a continuous swinging temperature for some weeks, with right epigastric rigidity. Later, fullness developed in the right loin, and the psoas shadow was absent on radiography. We diagnosed perinephric abscess with confidence, but 2 days before the date fixed for operation the temperature fell and recovery was spontaneous.

Suggested Explanation of the Acute Symptoms.—There is a consensus of opinion that abdominal rigidity results from a lesion of the peritoneum only. It is easy to imagine a staphylococcal lesion spreading slowly in the silent perinephric fat until the peritoneum is suddenly reached, when dramatic symptoms will develop in the course of a few hours. There is an essential difference between confirmed cases of staphylococcal perinephric abscess and the perforating lesions of appendicitis and peptic ulcer, in that perinephric abscess does not perforate into the peritoneal cavity. In fact, a perinephric abscess will rather present beneath the skin of the back. A perforating lesion gives rise to continued rigidity and tenderness, while it spreads, because more and more nerve-endings are involved, but in retroperitoneal infection we have a localised area of inflammation on the posterior aspect of the peritoneum, quite unlike the spreading peritonitis of the perforative lesion. Now we can suggest a reason why the rigidity and tenderness may disappear rapidly in our cases: it is because adaptation to sensory stimuli develops quickly in the nerve-endings of this limited area of peritoneum (Adrian 1928).

The origin of shoulder pain must be discussed (cases 1, 2, 3, and 9). The upper portion of the kidney lies upon the dorsal part of the diaphragm, which is derived from the 4th cervical myotome; hence this part of the diaphragm is innervated from cervical 4, and lesions of its covering peritoneum are referred to the distribution of the supraclavicular nerves (C3 and C4). This fact is well known in surgical practice and has been confirmed by the experimental work of Capps (1932); but in case 9 the chest pain is of special interest because the site of the pain was over the 2nd right intercostal space—i.e., within the zone of the supraclavicular nerves.

We have stated why we think that this syndrome is due to perinephric staphylococcal infection, but several objections to this hypothesis are evident:

(1) Why does it develop on the right side only?

(2) Why does it develop so often in West Africa, so rarely in U.K.?

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(3) Might the syndrome rather be due to an unusual type of epidemic?

We cannot say why the right side only is affected, but the following case is pertinent.

Male, aged 38, admitted with the diagnosis of left lumbar fibrositis of 6 weeks' duration. He had dull pain and some tenderness in the left loin and back, shown at operation to be due to a large left perinephric staphylococcal abscess containing at least 1 pint of pus. There were no signs of peritoneal involvement. This suggests that left-sided perinephric infection may not give rise to the syndrome we have described.

The second query is easily answered. Staphylococcal disease is not only very prevalent and virulent in the Forces in West Africa, but also it takes unusual forms.

As for the third query: is there any evidence that these cases were an infective epidemic? The sex and age-groups give no evidence, as the patients were members of the Forces and from widely separated units. However, it must be admitted that almost all our cases occurred from April to August, 1944.

There is one further point of interest (see case 11 in the table). Most surgeons, and this includes one of us, have at some time operated in England in full expectation of discovering an acute peptic perforation, only to be surprised by completely normal findings followed by spontaneous recovery. Are these puzzling cases examples of the syndrome described in this article? We suggest that all such cases should be examined with this syndrome in mind.

SUMMARY

A new abdominal syndrome is described. It consists in right upper abdominal pain and rigidity with pyrexia. It comes on in a few hours and simulates in many cases a perforative lesion. Spontaneous recovery is the rule.

Of 13 cases here reported 1 eventually developed a perinephric abscess.

It is suggested that the cases which recovered spontaneously were abortive forms of perinephric staphylococcal infection. Abortive perinephric staphylococcal infection may be common in the silent perinephric fat but symptoms do not arise unless the lesion touches the peritoneum.

Cases simulating perforated peptic ulcer, but with negative operative findings, are not uncommon. They may be of the same type as those described here.

Acknowledgment is due to Lieut.-Colonel J. A. W. Segerdal, R.A.M.C., for permission to publish these cases. We wish to thank Major J. C. G. Whitelaw, R.A.M.C., pathologist, and Captain T. E. Broadbent, R.A.M.C., radiologist, for coöperation and help.

REFERENCES

Adrian, E. D. (1928) The Basis of Sensation, New York, p. 90.
Capps, J. A. Coleman, G. H. (1932) Experimental and Clinical Study of Pain, New York. Quoted from S. Wright's Applied Physiology, 8th ed., London, 1945, p. 236.
Ryle, J. A. (1936) Natural History of Disease, New York and London, p. 224.

"... Mr. Bevan, throughout the proceedings in committee, firmly set his face against any proposals that might tie his hands. He has asked for virtually unlimited powers, and obtained them, not because he wants to be a health dictator, as his opponents claim, but because that is the last thing he dare be. It would need an establishment far beyond anything the Ministry of Health could hope to acquire if he were to attempt to oversee the detailed running of the health services. But until they are running, or at least until the structure has been set up, no-one can tell what powers will be necessary and what can be discarded in practice. Wide powers are to be taken in order to achieve flexibility, not excessive centralisation. That, at least, seems a reasonable interpretation of this enabling Bill, which, in an entirely new field of activity for the State, possibly leaves more undefined, and introduces more ambiguities, than any comparable measure. . . . The National Health Service Bill probably sets up the best structure that could be devised for providing such a very personal service for the people. But until it is certain that it will work as Mr. Bevan intends it to work, final judgment will still have to be reserved."—*Economist*, August 3, p. 163.

SPOROTRICHOSIS RESEMBLING DIPHTHERIA

REPORT OF AN UNUSUAL CASE

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SPOROTRICHOSIS is a rare disease produced by a fungus of the genus sporotrichum. The tissues primarily invaded have usually been subjected to some form of trauma or devitalisation, the organism being a saprophyte with relatively feeble powers of parasitism. The site of entry is most commonly the skin of the hand; invasion of mucosa is usually secondary, but a conjunctival lesion may be primary (De Beurmann and Gougerot 1912, Welder and McCullough 1914). The type of lesion usually produced is a granuloma of the subcutaneous tissue in the form first of nodules and later of gummata, abscesses, or ulcers. These are often distributed along the course of lymphatics leading from the primary lesion. They may, however, be disseminated widely by general blood-stream infection. Where the skin is soft, as in the face, the ulcers are usually echthymiform cup-like depressions (fig. 1). Foerster (1924) refers to a typical cup-shaped ulceration of the mucosa overlying the anterior part of the nasal septum. In the mucosa of the palate, pharynx, and conjunctiva the nodular character of the lesion is usually preserved in the form of small papillomatous or gummatous vegetations or yellowish follicular spots 1–2 mm. in diameter set in a greyish-yellow layer of mucopus (De Beurmann and Gougerot 1912). I can find no reference in the literature to mucosal lesions closely resembling diphtheritic membrane, and for that reason the following case is recorded.

CASE-RECORD

A female infant, aged 11 months, was admitted to Park Hospital on Feb. 28, 1944, certified as having nasal diphtheria. She had been ailing four weeks, the symptoms being nasal discharge, nausea, recurrent vomiting, and cough. The cough had become croupy a week before admission.

On admission the child was apyrexial and not particularly toxic. The fauces showed superficial ulceration, with thin membranous exudate covering the uvula and a small area of fauces and palate on each side of it. There was neither œdema nor redness round this lesion. The submaxillary glands were palpable, but there was no circumglandular œdema. The anterior nares and a small adjoining part of the upper lip were excoriated. There was a thin bloodstained nasal discharge but no definite membrane in the nares. The distinctive presenting sign was in the left eye: a thin soft yellowish sheet of membranous exudate, with well-defined margins, lining the whole of the palpebral conjunctiva of the lower lid. Beyond the margin of this membrane the fornix of the conjunctiva was red and œdematous. The cornea was slightly hazy. The right eye showed a somewhat similar condition, but the exudate on the palpebral conjunctiva was thin, flimsy, and less extensive. The voice was hoarse.

Clinically, the case appeared to be one of anterior nasal, uvular, ocular, and possibly laryngeal diphtheria. Swabs were taken from the three available sites, and it was noted that the membrane did not wipe off from the uvula and conjunctivæ, nor did it bleed. Diphtheria antitoxin 60,000 units was injected intravenously. The eyes were irrigated with saline and 20% 'Argyrol' instilled. All three swabs were reported next day to be negative for *Corynebacterium diphtheriæ* and to give a profuse growth of hæmolytic streptococcus. The swabs were repeated on the 29th with the same result, except that, on this one occasion, virulent *C. diphtheriæ* of gravis type was grown from the nose (probably a secondary infection picked up in the ward). Because of the hæmolytic streptococci the child was given sulphathiazole 0·5 g. four-hourly.

On March 1 the membrane in the fauces had spread considerably over both sides of the soft palate, uvula, and fauces, but without surrounding œdema or redness and without fœtor. It was firmly adherent but could be broken up on forcible swabbing without bleeding. The conjunctivæ in both

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eyes, but particularly the left, were very red and swollen and showed shreds and patches of greyish yellow exudate but not now a continuous sheet of membrane. The nares were more extensively ulcerated and exuded hæmorrhagic discharge. A swab from the palatal membrane on this day was negative for *C. diphtheriæ*, Vincent's organisms, and fungus in smears, but gave a good growth of hæmolytic streptococcus type 25.

On the 3rd the membrane covered the whole of the soft palate, still without surrounding redness or œdema, and without periadenitis. In both eyes there was now a brown-stained pellicle over the cornea. Although by this time there was much evidence against a diagnosis of diphtheria, for safety additional diphtheria antitoxin 60,000 units was given intravenously, and sulphathiazole was continued in the same dosage.

On the 4th the eyes were seen by Mr. M. Shaw, who reported "central bilateral corneal ulceration, extensive in the left eye; severe ulceration of palpebral surfaces of eyelids; conjunctivæ and eyelids œdematous." A blood-count showed white cells 13,000 per c.mm. (polymorphs 66%, eosinophils 0·5%, basophils 0·5%, lymphocytes 25·5%, monocytes 7·5%).

On the 6th the membrane in the throat extended over most of the palate, fauces, uvula, and posterior pharyngeal wall as far as could be seen. There was a hoarse cough, with occasional slight stridor on inspiration, but no recession of the chest wall. The membrane had been completely washed off the eyes, leaving corneal ulceration and opacity and severe conjunctival congestion. A throat swab and smear on this day showed no *C. diphtheriæ*, Vincent's organisms, or fungus, but only a pure growth of hæmolytic streptococci. A culture was put up for fungus. The hæmolytic streptococcus type 25 previously isolated was reported to be partially resistant to sulphanilamide but sensitive to sulphathiazole.

On the 9th the membrane in the throat and pharynx was still as extensive as ever and still without accompanying œdema. The ulceration of nares and upper lip was more extensive. The eyes exuded sticky seropurulent discharge, and there were an extensive left and a smaller right corneal opacity. There were stridor and slight recession at times. A new feature present was a small area of ulceration of the right auditory meatus and pinna, with seropurulent discharge (fig. 1).

On the 13th sulphathiazole treatment was changed to sulphadiazine 0·5 g. four-hourly. On the 15th the culture for fungus, set up on the 6th, was reported to have grown *Sporotrichum schencki* (fig. 2). Sulphonamide medication was stopped, and pot. iod. gr. $1^1/_2$ four-hourly substituted. The mucosa of mouth and throat was painted with Mandl's paint. The temperature, which had been practically normal throughout, now began to rise slightly.

On the 17th a large piece of the palatal membrane was examined for sporotrichum spores or mycelia in direct smear, with a negative result. Mr. Shaw reported a sloughing left cornea, and on the 18th removed the left eye. After the operation the child's condition deteriorated. By the 21st the temperature, which had been practically normal throughout, had risen to 103° F. There was still membrane on the buccal mucosa, gums, fauces, and palate; and the left eye socket showed a thick hard nodular mass in the conjunctiva of the upper lid. The child was coughing up bloodstained mucopus; and the *tips of the thumbs and circumanal region* showed superficial ulceration similar to that on the ear, nares, and upper lip. The child died on the 24th.

Fig. 1—Photograph, taken two days before death, showing sporotrichosis of nose, lips, chin, ear, and eye. The mouth, palate, pharynx, and larynx were also affected. Left eye has been surgically removed.

Necropsy (Dr. E. M. Young).—The *œsophagus* was covered with sticky mucopus, but there was no ulceration of the wall. *Mouth:* dense adherent membrane covered both tonsils, soft palate, and epiglottis. *Larynx:* aryepiglottic folds roughened but no ulceration. *Trachea:* purulent discharge but no ulceration. *Pleura:* no pleural fluid, no adhesions. *Lungs:* no consolidation; bronchi contained frothy mucopurulent secretion. *Heart* dilated on right side; slight excess of clear yellow fluid in pericardium. *Intestine* normal. *Liver:* a few areas of fatty degeneration. *Gall-bladder*, *kidneys*, and *suprarenals* normal. *Brain:* congestion and œdema but no gross lesion. *Middle ears:* both contained purulent material and necrotic bone. Culture from the exudate in the mouth gave a growth of *Sp. schencki* and of hæmolytic streptococci. Cause of death: sporotrichosis of mouth, pharynx, larynx, ear, and eyes; toxæmia.

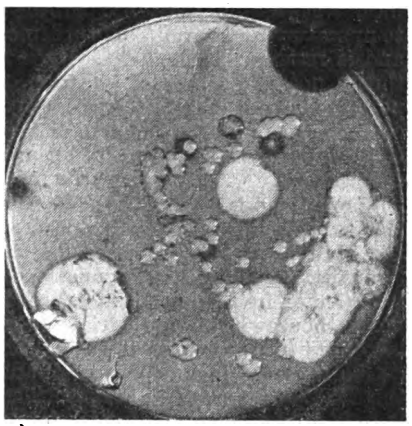

Fig. 2—Primary culture from swab of membrane on palate on 10th day after admission, showing *Sporotrichum schencki* (larger colonies) and *Monilia albicans* (smaller colonies) on Sabouraud's medium.

The left cornea removed at operation showed no distinctive histological features. The epithelial covering was denuded, and an inflammatory exudate was present, consisting largely of polymorphs, red blood-cells, and fibroblasts. In one part there was a well-marked new formation of granulation tissue. The posterior elastic lamina was not involved.

DISCUSSION

According to Jacobson (1932) sporotrichosis was first recognised by Link in 1809 and later by Montague in 1844. Schenck (1898) successfully isolated the fungus and was the first to describe sporotrichosis in the United States. De Beurmann and Ramond (1903) were the first to recognise the disease in France. Most of our knowledge of the disease is owed to De Beurmann and Gougerot (1912), whose monograph in two volumes still remains the monumental work on the subject. They describe two parasitic sporotricha but admit that these exhibit considerable pleomorphism, and that they may be merely different varieties of one parasite.

According to their description, *Sp. schencki*, on Sabouraud's medium, grows as white colonies with little tendency to pigmentation and presents a rough mountainous aspect with radiating furrows from centre to periphery; spores are few. It is the common variety in the United States. *Sp. beurmanni* commonly grows as brownish or even chocolate colonies but sometimes remains white for some days. The surface aspect is one of fine whorls irregularly crossed by crests and furrows; the spores are massed in large numbers. It is the common variety in France. There is a general tendency in recent literature to classify all parasitic sporotricha as *Sp. schencki* in honour of the discoverer. On culture, growth does not become visible for at least four days. By the eighth day the colony is about 1 cm. in diameter, and by the 24th day it may be 4 cm. or more in diameter, with a pigmented centre. Microscopically, the mycelia

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appear as hyaline fine branching organisms 1–2 μ in diameter. The spores are oval or oat-shaped and are attached to short lateral branches or longer hyphæ.

The fungus has been found on many types of vegetation, living, dead, and decayed—e.g., leaves, bark, barberry bush, sphagnum moss—on the fur, skin, or lesions of the natural disease in domestic and laboratory animals—e.g., cat, rat, and rabbit—and on insects—e.g., flies, wasps, and ants. It grows readily at ordinary temperature on various culture media in the open air and is resistant to sunlight. Even contaminated soil is thus a possible source of infection. Most of the human patients have been infected, from live or dead vegetation, on the site of an injury of skin or mucosa—e.g., the prick of a barberry thorn, the bite of an animal, or the sting of an insect.

Sporotrichosis is mainly a disease of adults, particularly of agricultural manual workers and housewives. In the United States 206 cases had been reported up to January, 1940, the chief occupations of the victims being, in order of frequency, farmers, gardeners, and nurserymen, housewives, industrial workers, and general labourers (Gastineau et al 1941). Most of the reported cases have been in the Mississippi and Missouri valleys of the United States and in France. The fungus, however, is known to be widespread and found in every country. In Britain 9 cases had been reported up to the year 1932 (Gray and Bamber 1932).

The disease is usually chronic. The organism can remain a saprophyte in man and invade the tissues long after inoculation. Similarly, it can persist (in the pharynx and larynx at least) several months after healing of the lesions (De Beurmann and Gougerot 1912). Prognosis in the common cutaneous lymphatic variety is good, but is grave in all mucosal lesions. Treatment with iodides is generally effective, at least in the cutaneous variety. Iodides should be given up to the limit of toleration—e.g., gr. 30–75 daily for three weeks and continued in reduced dosage for at least three months, or for six weeks after visible healing of the lesions.

The case described was of a very unusual type. Its presenting features on admission to hospital included superficial ulceration of the anterior nares, superficial ulceration and thin membranous exudate on the uvula and adjacent parts of the soft palate, and thin membranous exudate lining the whole of the palpebral conjunctiva of the left lower eyelid. The last-named lesion bore an exceedingly close resemblance to that of ocular diphtheria as previously seen by me. The absence of the typical discrete papillomatous lesions of sporotrichosis, both on the conjunctiva and on the palate and fauces, was as remarkable a feature of this case as was the presence of false membrane in the eye and palate. The only lesion which developed according to type was the cup-shaped ulceration spreading from the anterior nasal septum to the lips and side of the face. The membrane on the palate looked like the false membrane of diphtheria for days, but the absence of surrounding œdema and of periadenitis, after the membrane had grown all over the palate, made a diagnosis of diphtheria after a few days most unlikely. This was confirmed by the many negative reports on swabs from eye, nose, and throat. The one swab positive for *C. diphtheriæ*, obtained from the nose twenty-four hours after admission to the ward, was almost certainly a ward contamination, since this finding was not confirmed by earlier or later swabs, the clinical course, or the necropsy. The pathological work made it clear that the case was one of sporotrichosis complicated by a persistent infection with type-25 hæmolytic streptococcus. Whether the streptococcal infection was a factor in modifying the clinical picture or not is a matter of speculation.

The diagnosis of sporotrichosis in the absence of a typical clinical picture usually involves delay, since the organism is not commonly seen in direct smears, and the result of a culture cannot be known for five days or more. A serum test for antibody may be tried, if a suspension of sporotricha is available as an antigen. For a positive result the titre should be high, since actinomycosis may also give a positive result in low dilutions. A dilution of 1 : 800 is suggested as a typical positive result (Foerster 1924, Gaucher 1910). In the present case the diagnosis was made by culture on the sixteenth day after admission to hospital.

Treatment with potassium iodide in this case was without effect. De Beurmann and Gougerot (1912) emphasise the grave prognosis of pharyngeal sporotrichosis in contrast to that of the cutaneous lymphatic type. Surgical treatment should be avoided as far as possible. French (1941) mentions a case in a man, aged 42, who died after amputation of the hip-joint, having had the disease for 39 years. In the present case, although the prognosis was always desperate, there was rapid deterioration after the removal of the eye.

SUMMARY

A brief account of the rare disease sporotrichosis is given.

A case of pharyngeal, ocular, and nasal sporotrichosis is described which was unusual in closely resembling diphtheria on first examination.

My thanks are due to Dr. E. M. Young, assistant pathologist, Southern Group Laboratory, Park Hospital; Mr. M. Shaw, ophthalmologist; and Dr. L. J. M. Laurent.

REFERENCES

De Beurmann, C. L., Gougerot, H. (1912) Les Sporotrichoses, Paris, vol. II, p. 316.
— Ramond, L. (1903) *Ann. Derm. Syph., Paris*, **4**, 678.
Foerster, H. R. (1924) *Amer. J. med. Sci.* **167**, 54.
French, E. D. (1941) *J. Florida med. Ass.* **28**, 61.
Gastineau, F. M., Spolyar, L. W., Haynes, E. (1941) *J. Amer. med. Ass.* **117**, 1074.
Gaucher, E. (1910) Diseases of the Skin, London, p. 357.
Gray, A. M. H., Bamber, G. W. (1932) *Proc. R. Soc. Med.* **25**, 668.
Jacobson, H. P. (1932) Fungous Diseases, London, p. 121.
Schenck, B. R. (1898) *Bull. Johns Hopk. Hosp.* **9**, 286.
Welder, H., McCullough, C. P. (1914) *J. Amer. med. Ass.* **62**, 1156.

PEPTIC ULCER
TREATED WITH GASTRIC AND INTESTINAL EXTRACTS

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SINCE certain substances occurring naturally in the body—e.g., histamine—can give rise to peptic ulcer (Matsueda 1931, Friedenwald et al. 1932, Carnot et al. 1933), it is reasonable to suppose that other substances occurring naturally in the body may prevent ulcer formation. Many biologically active substances have been isolated from the intestinal tract—e.g., cholecystokinin, secretin, enterocrinin, villikinin, enterogastrone, and urogastrone. Knowledge of enterogastrone and urogastrone is due to Gray (1941), Quigley (1941), Sandweiss et al. (1941), and Ivy (1941). Enterogastrone, extracted from the intestinal mucosa, diminishes gastric secretion, decreases gastric motility, and participates in the regulation of the blood-supply to the gastric and duodenal mucosa. Thus enterogastrone can largely prevent the appearance of intestinal ulcer in dogs subjected to duodeno-ileal anastomosis and gastrojejunostomy according to the technique of Mann and Bollmann (1933). Urogastrone is a substance, analogous to enterogastrone, obtained from urine; it is found in decreased quantity in the urine of ulcer patients, and it has been assumed to represent an excretory form of enterogastrone. Good results have been obtained in cases of gastroduodenal ulcer by injection of urogastrone, but experience of administration of enterogastrone has apparently not yet been reported.

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Independently of the results obtained in the United States, extracts have been prepared in Switzerland from the tissue of the stomach and the small intestine of freshly slaughtered animals. These extracts[1] are free from lipoids and proteins. The water-soluble part of the finished extract is used for injection, and the water-insoluble fraction is put up in tablets, to make possible the simultaneous administration of injections and tablets. The preparation for the treatment of gastric ulcer contains predominantly extract of stomach, whereas that for the treatment of duodenal ulcer contains principally extract of small intestine.

The treatment of gastritis, gastric ulcer, and duodenal ulcer with gastroduodenal extracts is based on the supposition that the normal functions of the stomach and the duodenum are maintained by various biologically active substances, the absence of which favours ulcer formation. In Switzerland this therapy has been not only the subject of much clinical work (Schmassmann 1944, 50 cases; Mamie 1944, 24 cases; Keiser 1945, 37 cases; Neumann 1946, 55 cases; Berther 1944, 20 cases) but also of an experimental investigation by Roulet (1945), who obtained rapid healing of histamine ulcers in guineapigs, even when the ulcerative agent, histamine, continued to be given.

The direction of attention to a new form of ulcer therapy is justified on the following grounds:

(1) The increasing incidence of gastric and duodenal ulcers.
(2) The unsatisfactory outcome of other forms of ulcer therapy, including treatment with sexual and adrenocortical hormones, whereby undesirable secondary effects (diminished potency, mastodynia, œdema, hypertension) are caused.
(3) In general practice the imposition of a strict diet is not easy, and the wish of a patient not to cease work must often be granted.

MATERIAL AND METHODS OF TREATMENT

Our experience of treatment with the robuden preparations extends over sixteen months and comprises 54 cases: 25 gastric ulcers, of which 9 were indurated; 15 duodenal ulcers, of which 1 was indurated; 3 cases of simultaneous gastric and duodenal ulcers; 7 of gastritis; and 4 tumours.[2]

The great majority of the patients were ambulant; only 3 patients were admitted to hospital for treatment. These 3 patients were given a strict diet, but the other patients were simply advised to avoid articles of food which, in their own experience, gave rise to symptoms. Most of the patients never absented themselves from their work; this feature of the treatment, together with the obviation of confinement to bed and dieting, constitutes a real advantage, especially in view of the continuing increased incidence of ulcer.

Where possible both injections and tablets were given. The total number of injections ranged from 12 to 21, given either daily or three times a week; the tablets were given at the rate of 3 a day before meals or at the rate of 6 a day, 1 tablet before and 1 tablet after each meal, for several months. In especially resistant cases the number of injections was increased to 30 or more. In the case of patients who refused the injections, or who on practical grounds could not attend daily for injection and did not wish to be admitted to hospital, only the tablets were prescribed. Patients with gastric ulcer were treated with stomach extract, and patients with duodenal ulcer were given extract of small intestine. Patients with both gastric and duodenal ulcers were treated with both extracts given alternately. Disregard of this principle by treating one such patient with stomach extract alone led to healing of the gastric ulcer in the usual time, whereas the duodenal ulcer remained unaltered.

1. 'Robuden pro U. ventr.,' 'Robuden pro U. duod.,' and 'Robuden' tablets made by the Robapharm Laboratories, Basle.
2. Abstracts of the case-records can be obtained from the author.

RESULTS

In estimating the success attained, attention has been directed principally to alterations in the general subjective condition, disappearance of symptoms, and decrease in size of the ulcer niche as disclosed radiologically. Decrease in size rather than disappearance of the niche is emphasised, because experience has shown that an ulcer may escape radiological observation by becoming filled with remnants of food or as the result of œdematous alteration of the mucosa. The acidity values have been neglected, because this aspect has already been exhaustively dealt with by Schmassmann (1944), Neumann (1946), and others, and because modern work tends to assign less importance to the gastric chemical processes in regard to the diagnosis and treatment of digestive troubles. Schmassmann reported that robuden exercised a regulatory action on gastric acidity, both hyperchlorhydria and hypochlorhydria tending to return to normal.

RESULTS OF TREATMENT OF PEPTIC ULCER WITH TISSUE EXTRACTS

Diagnosis	No. of cases	On the basis of—			
		Subjective and clinical examination		Radiological examination	
		Good results	No improvement	Good results	No improvement
Simple gastric ulcer ..	16	16	0	7*	0
Indurated gastric ulcer..	9	6	3	4	5
Simple duodenal ulcer ..	14	13	1	6†	1†
Indurated duodenal ulcer	1	0	1	0	1
Gastric ulcer and duodenal ulcer	3	3	0	3	0
Gastritis	7	6	1	2‡	0
Tumour	4	0	4	0	4

* Only these 7 cases out of the total of 16 were followed radiologically.
† „ 7 „ „ „ 14 „ „ „
‡ „ 2 „ „ „ 7 „ „ „

Of the 54 cases, 33 were followed radiologically; the remaining 21 cases were examined radiologically at least once.

The table shows a lack of good response to treatment in the indurated ulcers, whilst Schmassmann (1944), Hemmeler (1944), and Mamie (1944) also reported lack of success with such ulcers. We found subjective and objective clinical improvement in two-thirds of the cases of indurated ulcer, although rather less than half of them showed radiological improvement. The suitability or otherwise of an ulcer to treatment with these extracts depends on the radiological structure of the ulcer niche rather than on its size. In 2 cases of indurated ulcer, after failure of ambulant treatment, admission to hospital and prescription of a strict diet did not lead to improvement, probably because the ulcers had caused structural anatomical changes requiring surgical intervention. In one case the persistence of subjective symptoms was due to the gastric crises of tabes. In one case of duodenal ulcer and in one of gastritis there was radiological improvement coupled with unchanged subjective and clinical symptoms; psychiatric examination disclosed a neurosis in both cases.

The time required for the treatment to produce an effect is very variable; improvement rarely took place before the tenth injection, or, if tablets alone were administered, before fourteen days. On completion of a course of injections, the tablets should continue to be taken for 2–3 months.

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Secondary Effects.—Apart from occasional severe pain at the injection site, no undesirable secondary effects have been encountered; onset of fever in 2 cases was traced to the fortuitous presence of pulmonary and of oral infection. As the extracts are free from protein, activation of an intercurrent malady is unlikely.

Relapses.—Schmassmann (1944) suggested the administration of robuden tablets in the spring and autumn as a prophylactic measure; this suggestion has been taken up in many clinics and in general practice, and we also have adopted it. The period of our observations is yet too brief to permit conclusions to be drawn; but, excluding cases of indurated ulcer, we have encountered only 3 cases of relapse in sixteen months; and these were cases not submitted to this prophylactic treatment. It may be noted that the number of relapses following other earlier medical treatments was much greater.

SUMMARY

Of 54 cases treated with extracts of stomach and of small intestine 44 showed good results, the majority being subjected to radiological control. The 10 failures included 2 neuroses, 3 indurated ulcers, old scarry deformations (1 case), carcinoma (3 cases), and 1 gastric tumour. (Previous publications in Switzerland list 234 cases, of which 209 (89%) reacted favourably to this treatment.)

All the cases which benefited by this treatment showed rapid disappearance of symptoms, increase of weight, and rapid decrease in size of the ulcer niche as disclosed by radiography. Some cases of indurated ulcer reacted favourably, but others, and cases involving tumours, were not influenced.

These results were obtained without dietetic restriction or confinement to bed.

Injection of the preparations gave rise to no undesirable secondary effects apart from occasional pain at the injection site.

The administration of the extracts as tablets to supplement the injections and as prophylaxis is suggested.

I wish to thank Prof. W. Hadorn, director of the Medical Ambulatory Clinic of the University of Berne, for his advice and encouragement.

REFERENCES

Berther, S. (1944) *Schweiz. med. Wschr.* **74**, 1334.
Carnot, P., Simmonet, H., Tissier, M., Cachera, R. (1933) *C.R. Soc. Biol. Paris*, **113**, 1517.
Friedenwald, J., Feldmann, M., Morrison, S. (1932) *Trans. Amer. gastro-ent. Ass.* **35**, 327.
Gray, J. S. (1941) *Amer. J. digest. Dis.* **8**, 365.
Hemmeler, G. (1944) *Gastroenterologia*, **69**, nos. 3–4.
Ivy, A. C. (1941) *Amer. J. digest. Dis.* **8**, 361.
Keiser, D. (1945) *Schweiz. med. Wschr.* **75**, 913.
Mamie, M. (1944) *Praxis*, no. 42.
Mann, F. C., Bollmann, J. L. (1933) *J. Amer. med. Ass.* **99**, 1576.
Matsueda (1931) *Klin. Wschr.* **10**, 2265.
Neumann, H. (1946) *Schweiz. med. Wschr.* (in the press).
Quigley, J. P. (1941) *Amer. J. digest. Dis.* **8**, 363.
Roulet, F. (1945) *Schweiz. med. Wschr.* **75**, 912.
Sandweiss, D. J., Sugarman, M. H., Friedman, M. H. F., Salzstein, H. C., Farbmann, A. A. (1941) *Amer. J. digest. Dis.* **8**, 371.
Schmassmann, H. (1944) *Schweiz. med. Wschr.* **74**, 576.

Reviews of Books

Principles of Dynamic Psychiatry

Including an Integrative Approach to Abnormal and Clinical Psychology. JULES H. MASSERMAN, M.D., division of psychiatry, University of Chicago. London: W. B. Saunders. Pp. 322. 20*s.*

THE aim of this intelligent and ambitious book is to introduce the student to the principles of modern dynamic psychiatry; a companion volume will elaborate the application of these principles to diagnosis and treatment. The book has arisen out of the author's need as a teacher to have a test to which he could refer his students for basic information; he points out that at present the beginner may "either become compulsively and sometimes morbidly intrigued with some special and narrow approach (such as the 'somatic,' 'reflexologic,' 'semantic,' or 'psychoanalytic') or he may fly from the wilderness of some of the current literature and from his own anxieties by deciding, not altogether correctly, that psychiatry is a contentious cacophony of fantastic dogmas, contradictory nosologies, and impractical theories somehow inserted into an otherwise 'scientific' university or medical school curriculum." Thus obviously aware of some of the pitfalls, Dr. Masserman has done his best to synthesise the products of his wide reading, his clinical and psychological experience, and his valuable experiments into the relationship of the hypothalamus to behaviour in the cat: the outcome is a stimulating, slightly pretentious book which students will find harder to read and much more solid and satisfying than the usual hackneyed expositions.

Psychiatry as a medical science, psychological and psycho-analytical concepts of behaviour, and the dynamics of adaptation and mental disorder make up the first part of the book: in the second a general biodynamic theory of behaviour is put forward, with frequent, sometimes critical, reference to the theory of conditioned reflexes and to psycho-analysis, from which the author's "biodynamic correlations" are largely derived. The last chapter of the work is devoted, very agreeably, to a critique of the biodynamic theory: the author puts his theory in the dock, and after fair and kindly examination of what prosecuting counsel have to say, acquits it of everything except necessary incompleteness. Appendices contain an illustrative account of the psycho-analysis of a neurotic personality, and reprinted articles on psycho-analytic formulation of the psychoses, and some principles of group communication. A bibliography of about 200 titles, and a glossary, complete the slightly exuberant book.

Postural Circulatory and Respiration Changes During Ether and Intravenous Anesthesia

TORSTEN GORDH, anæsthetist-in-chief, Karolinski Sjukhuset, Stockholm. Stockholm: *Acta Chirurgica Scandinavica.* Supplement CII. Pp. 126.

Dr. Gordh has undertaken the sort of fundamental research in anæsthetics which is still needed. The work, profusely illustrated with kymographic records, is divided into three parts. The first contains an extensive summary of the literature on the effects of ether and barbiturate anæsthesia on the circulation and respiration. (The first description of intercostal paralysis as a sign of deep anæsthesia is here attributed to Albert Miller, in 1925, instead of Snow, who described it in 1858.) The second part records the author's own researches on the rabbit, which confirm the clinical findings of every anæsthetist. Dr. Gordh demonstrates the benefit of a moderate Trendelenburg position on the circulation and respiration, and the baneful effects of anoxia and of carbon dioxide excess. In the third part the value of the head-down posture and oxygen excess in the treatment of cardiorespiratory failure during clinical anæsthesia is discussed and emphasised. English-speaking anæsthetists will be gratified to learn that such excellent fruit as this monograph has sprung from seeds sown during Dr. Gordh's visits to this country and to America.

Ocular Prosthesis

J. H. PRINCE, F.B.O.A., F.S.M.C. Edinburgh: E. & S. Livingstone. Pp. 134. 17*s.* 6*d.*

Mr. Prince sets out to describe the process by which artificial eyes may be made and fitted, and he gets to the root of his subject by a first chapter on the history and development of artificial eyes from 2500 B.C. onwards, and follows it with a chapter on the anatomy and physiology of the orbit. This second chapter needs serious revision; many random and inaccurate statements are made on the pathology and surgery of the eye and orbit, and many other statements leave one in doubt as to their true meaning. The words exenteration and evisceration are repeatedly confused, and there is an unsatisfactory diagram of the anatomy of the orbit and surrounding structures. The chapter on the principles of fitting prostheses concludes with some harrowing descriptions of how eyes may be lost. In the latter half of the book Mr. Prince is on his own ground, and here the reader will get some help on the fitting and making of artificial eyes. When this book has been revised with the aid of an ophthalmic surgeon it will fill a definite need, especially among artificial-eye makers.

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THE LANCET

LONDON: SATURDAY, AUGUST 24, 1946

The Peptic Ulcer

THE natural history and treatment of peptic ulcer are still two of the most important problems of medicine, and further inquiry into their environmental and economic aspects is badly needed. Already, however, such studies have begun to give useful indications. In younger people, at any rate, it seems that the mortality from gastric ulcer is related both to poverty and to employment, though in the latter case it is an inverse relationship in that a rise in employment tends to be associated with an increase in mortality, perhaps because of the extra stresses and strains of work as against the leisure of unemployment! As MORRIS and TITMUSS [1] have written, "it is hard to resist the conclusion that urban life nowadays is an ideal soil for the flowering of the ulcer temperament." Psychosomatic factors concerned in ulcer formation have had much attention, and such observations as those of WOLFF and WOLF on their patient "Tom" have demonstrated beyond question the extreme changes that the gastric mucosa may show under emotional stimuli, particularly those associated with feelings such as frustration or resentment. The influence of emotion on the "psychic secretion" of gastric hydrochloric acid, and on the tone and motility of the stomach, has also been demonstrated. For instance, MCCARTHY,[2] at the Mayo Clinic, finds that mice which show great enthusiasm at the sight of food also have a greater gastric secretion than those apparently indifferent to food. From this work he concludes, with others, that a simple gastric test-meal without correction for dilution with duodenal juice, and without some separation of the different phases of secretion (nervous and chemical), is liable to be fallacious. There are, as he says, many possible causes of high acidity, such as excessive psychic stimulation, increased gastric or intestinal chemical excitation, imperfect regurgitation from the duodenum, and even excessive absorption of water. Both the psychic and the intragastric chemical phases of secretion are controlled largely by the vagus, and his experiments in mice show that they can be influenced by vagotomy. This operation greatly reduced gastric acidity in his mice, and on the view that ulcer healing demands control of gastric acid it has already been tried in man for the treatment of peptic ulcer.

One of the many important investigations into the chemical control of acidity has been the work on the isolation of enterogastrone, to which an article by Dr. HUBACHER in our present issue again calls attention. This investigation, developed during in the war, was based on the familiar fact that fats in the intestine have an inhibitory effect on the pepsin-secreting cells in the stomach, and that the same inhibition takes place in gastric pouches deprived of any nerve-supply. By making an extract of intestinal mucosa which had been in contact with fat, KOSAKA and LIM [3] produced a substance to which they gave the name enterogastrone, which inhibited gastric secretion by a humoral mechanism. Later IVY and his co-workers studied this substance, and purified it considerably, so that it has been used (as has a similar substance found in normal urine and called urogastrone) in the treatment of patients with peptic ulcer. Now Dr. HUBACHER is able to report results of the treatment, with gastroduodenal extracts, of 54 patients suffering from gastric or duodenal ulcers. The idea behind this treatment is that normal gastric and duodenal function is maintained through the stimulus of various biologically active substances (such as enterogastrone) which are present in healthy mucosa and whose absence favours ulcer. The extracts used by Dr. HUBACHER are in his opinion specific in the sense that he was successful only when stomach extract was used for gastric ulcer, and small-intestine extract for duodenal ulcer, and not if the extracts were reversed. Of his 54 patients, mainly ambulant, most were given treatment by injection as well as by mouth, and did not leave off work or abide by any strict diet; and of these 54, all but 10 showed "good results" over sixteen months.

Such reports necessarily call to mind the similar results obtained at first by injection of histidine, which has not, however, substantiated its claim to be a specific remedy. As a correspondent points out on p. 272, the last word in these matters rests with the statistician, and before drawing conclusions about the treatment of peptic ulcer a great deal of attention must be paid to controls. In few other fields of therapeutics is it so difficult to judge the efficacy of alternative forms of treatment, and any period of observation of less than five years is open to the criticism that natural remissions are characteristic of peptic ulcer, and that long periods of healing and freedom from symptoms may follow the most varied forms of treatment or none at all. The facts as known at present certainly do not justify discarding the proved aids of rest, diet, and regimen, and while we continue to believe in a neurogenic factor in causation, we must recognise the effect of suggestion, encouragement, and confidence, in the control of symptoms.

1. Morris, J. N., Titmuss, R. M. *Lancet*, 1944, ii, 841.
2. McCarthy, H. H. *Proc. Mayo Clin.* 1946, **21**, 142.
3. Kosaka, T., Lim, R. K. *Proc. Soc. exp. Biol. Med.* 1930, **27**, 890.

"Patent" Medicines

THE publication of *Secret Remedies* and *More Secret Remedies* by the British Medical Association [1] some thirty-five years ago drew public attention to a public scandal. Though analyses of many worthless "patent" medicines had previously been published in these columns and elsewhere, the two books represented a declaration of war by the profession. At first success seemed certain; a Royal Commission was set up and declared itself emphatically against "cunning swindlers who exploit for their own profit the apparently invincible credulity of the public." Unhappily, its report was published on August 4, 1914, and for the next four years Parliament was otherwise occupied; but the commission's findings have remained the yardstick for the measurement of progress. That substantial progress has been made cannot be denied, though legislation still falls short, in some respects, of that recommended in 1914. Among Parliament's contributions have been the elimination, in 1917, of the treatment of venereal diseases by the unqualified; the Dangerous Drugs

1. Secret Remedies, B.M.A., London, 1909. More Secret Remedies, 1912.

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Act of 1920, which stopped the sale of drugs of addiction except by a doctor's order; the Poisons Rules of 1935, which require that any preparation containing a poison must be explicitly labelled; and, perhaps most important of all, the Pharmacy and Medicines Act of 1941, which in the turmoil of the second world war slipped on to the statute-book almost unnoticed, except by the trade. Its outstanding provision is that the formula of "any article consisting of or comprising a substance recommended as a medicine" must be disclosed on the label, though unfortunately it does not insist that the substances should be called by their usual names. Other bodies too have played their part. The Pharmaceutical Society, under the Pharmacy and Poisons Act of 1933, has a disciplinary committee competent to strike from the register a pharmacist shown to have been guilty of misconduct; a considerable section of the daily press, through the Newspaper Proprietors' Association, acknowledges a self-imposed censorship of advertisements; and the Advertising Association, the Proprietary Association of Great Britain, and the Chemists' Friends Association all have agreed codes.

Is this enough? Mr. HUGH LINSTEAD, M.P., himself a pharmacist of wide administrative experience, replies emphatically No in a monograph [2] which, if it misses the incisiveness of the late Prof. A. J. CLARK's classical review of the same field,[3] is yet a balanced and scrupulously fair survey. Mr. LINSTEAD very properly explains that, despite the booklet's title, his quarrel is not with patent medicines (for with present-day law there are none) nor with the reputable proprietary preparations which most doctors are glad to use, but with the more dubious concoctions sold direct to the public—whose advertisement fosters needless fear of disease and which slim the nation's purse to the tune of £12–15 million a year. He gives a moderate but informative account of the subtleties by which this money is wheedled out of the public's pocket: he has a word for the unsolicited testimonial, the pseudo-scientific jargon and the extravagant claims of advertisements, the stimulation of false hope in the chronically sick, and, above all, the reliance on fear. On the effects of the trade he is at one with CLARK, who held that "the harm done by the frightening of individuals is much less serious than the harm that results from subjecting the public to a steady stream of misinformation regarding the elementary laws of health." Dr. THOMPSON's article on p. 280 shows how freely this stream still flows.

Mr. LINSTEAD ascribes omission to control the trade not so much to vested interest or awe of the press (which, of course, is closely affected) as to lack of public demand. The truth, he says, is that most manufacturers see to it nowadays that active ingredients are contained in their preparations, and one way or another, most of them do benefit their adherents. But he thinks that this trade fosters disease-consciousness, and leads to the postponement of seeking skilled advice, and that prices are often excessive. He suggests that the Minister of Health should be charged with over-seeing proprietary medicines; that a register of manufacturers and medicines should be kept, and that a medicine not complying with statutory conditions should be suppressed; and that advertisement and postal offers of diagnosis and treatment should be more strictly controlled, particularly to exclude false, misleading, or exaggerated claims.

Mr. LINSTEAD sees in this an element of conflict between State and individual; for he adds that "the advertising of proprietary medicine undermines public confidence in a State medical service and in the registered medical practitioners at whose hands such a service must be provided." Perhaps Mr. BEVAN also holds this view; during the committee stage of the National Health Service Bill he was heard to say that he regarded extension of the law "as a matter of some urgency." [4] The captious may reason that the warrant for further legislation was as valid years ago as it is today; but few will dispute the need for legislation, whatever the reasoning behind it. It will not be easy. What, for example, are to be the "statutory conditions" which the Minister of Health is to enforce, and how are they to be interpreted? In pharmacology the borderline between the active and the inert, between the therapeutic and the useless dose, is still often obscure; and if some of the conditions are to rest on such data, the Minister may be denied the precise guidance he will need. But we should not be deterred by punctilio. The *Economist*,[5] advocating the control of advertisements and a cost analysis, says: "If the patient does not believe the doctor when he is told that there is nothing the matter with him, or if he does not want to consult a doctor at all, he will be able to buy medicines that do not require a medical prescription at the chemist's shop. . . . But at least he will not be subjected to constant external pressure to make him into a constipated hypochondriac." We may all accept at least this modest ambition as a first aim.

Repair of Nerve Injuries

DURING the last few years much experimental work has thrown doubt on the view, expressed at the end of the 1914–18 war, that in the treatment of peripheral nerve injuries the result is largely independent of the interval between wounding and surgical repair.[6] The Americans, having made up their minds that delay is harmful, laid their plans accordingly, and SPURLING and WOODHALL [7] now report a series of nearly 3000 early nerve operations carried out in American military hospitals in the United Kingdom, in the period roughly covered by the invasion of Europe until VE-day. In the opening phases of the campaign the average delay before operation was 28 days; in the time of heaviest fighting before VE-day it rose to 42 days, owing to the great pressure of work; and the average for the whole period was 39 days.

Nerve suture was performed in 54% of the operations—about 1500 sutures in all—and it was found that the operations presented relatively little difficulty. There was very little scarring, and the stumps were so readily mobilised that the number of gaps that could not be closed by end-to-end suture was less than 1%. The comparative absence of scarring must, of course, have been attributable rather to the excellence of

2. Patent Medicines: an Indictment. Hugh Linstead. Obtainable from *National News-Letter*, 162, Buckingham Palace Road, London, S.W.1. Pp. 33. 1s.
3. Clark, A. J. Patent Medicines, London, 1938.
4. Standing Committee C: official report, July 2, 1946, para. 950.
5. Jan. 6, 1945.
6. Medical Research Council, Report on Peripheral Nerve Injuries, 1920.
7. Spurling, R. G., Woodhall, B. *Ann. Surg.* 1946, 123, 731.

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the primary wound treatment than to the shortness of the time since injury. These were, however, only secondary considerations, and SPURLING and WOODHALL very properly base their advocacy of early secondary suture on the favourable condition of the peripheral nerve stump and of the denervated muscles during the early days after injury.[8] With the passage of time serious and ultimately irreversible changes take place. Yet, although American and British surgeons are now convinced of the merits of early intervention, it still remains to be decided whether early secondary suture is superior to primary. Theoretically, it is not; but, because of the unpredictable character of most injuries damaging nerves, the primary operation presents certain technical hazards, the most important of which, as ZACHARY and HOLMES [9] have pointed out, is the difficulty in estimating the extent of intraneural damage that accompanies every nerve division. Their condemnation of primary suture is shared, so far as war injuries are concerned, by SPURLING and WOODHALL.

A comprehensive survey of the end-results in their cases cannot be made for another two or three years, but a certain number of undoubted failures have already been recorded. Among 89 primary sutures there were 20 failures—a rate of 22%—which is distinctly higher than their figure of 5% for the series of early secondary sutures. The follow-up period had necessarily been very short: only 12 cases in one group of 649 have been examined more than a year after suture and only 201 cases have been followed for six months; so the authors have had to be content with recording only the first signs of recovery. Early indications of return of motor or sensory function were noted in slightly more than half of all cases seen six months or more after operation.

There is no doubt that the vigorous and sane policy pursued by Colonel GLEN SPURLING when he was consultant in neurosurgery in the European theatre of operations resulted in the performance of nerve suture in a very large series of cases under conditions more favourable than have ever been known before. The series of cases now reported is unique, and it is therefore all the more important that the most strenuous efforts should be made to keep in touch with all these patients. The late results may well prove the most informative in the whole history of peripheral nerve surgery.

8. Bowden, R. E. M., Gutmann, E. *Brain*, 1944, **67**, 273.
9. Zachary, R. B., Holmes, W. *Surg. Gyn. Obstet.* 1946, **82**, 632.

Annotations

DANGER FROM ICE-CREAM

Now that we have learned to keep sewage and drinking-water separate, it is time to take more care over keeping fæces out of food. The control of dysentery and the enteric diseases depends on teaching people to wash their hands after defæcation. In America much more is being done than in this country to educate food-handlers about personal cleanliness, but with certain foods additional precautions are needed.

Ice-cream is like milk in that it is a perfect bacteriological medium; but, unlike milk, it does not usually start off with a legacy of pathogenic organisms. Of the substances used in its manufacture, milk, dried egg, and possibly gelatin might contain pathogenic bacteria. Regulations laid down by the Minister of Health should do much to prevent the salmonella in dried egg from causing trouble, and as some form of heat is used in the preparation of most commercial ice-cream the danger from indigenous pathogens is further reduced. In the so-called cold-mix method there are dangers, though paradoxically they may be less than in the hot-mixes, where initial heating often destroys the bacteria present in the original mixture. The chief danger in all types of ice-cream manufacture lies in human contamination, either from dirty hands or from infected droplets coughed into the mixture before it is frozen. In a recent investigation of three outbreaks of staphylococcal food-poisoning caused by ice-cream G. S. Wilson and his colleagues,[1] at Oxford, showed that in all cases the contaminated food had been allowed to stand unfrozen for anything up to 30 hours after preparation. It is during this interval between preparation and freezing that pathogens introduced into a hot-mix find not only a perfect medium for growth but almost equally perfect temperature conditions for rapid multiplication. For this reason the hot-mix method is probably the most dangerous, and the Oxford workers recommended that after preparation ice-cream mix should be frozen almost immediately if pathogens or toxin-producing organisms are to be prevented from multiplying while the mix is slowly cooling down. The remedy, therefore, is some method of immediate cooling, and we are glad to hear that the Ministry of Health is considering compulsory pasteurisation for all types of ice-cream except that made by the cold-mix method. With such regulations in force there is little doubt that large outbreaks like that at Aberystwyth could be avoided.

There remains the problem of getting some workable and reliable method for the bacteriological control of ice-cream. A total bacterial count at 37° C gives some idea of bacteriological cleanliness; but the difficulties of this test may hinder its adoption, and there is need for further study. Many local authorities are also worried because a variety of watery mixtures, sold to the public as ice-cream, may be made in insanitary kitchens, and they seem to have little power to put matters right. The outbreak at Aberystwyth may serve a useful purpose if it forces public opinion to see that such things do not happen again.

CHEMOTHERAPY IN INFLUENZA

VIRUS infections, with the possible exceptions of trachoma, lymphogranuloma inguinale, and lymphocytic chorio-meningitis, do not respond to drugs of the sulphonamide group. The influenza virus is one of those against which no chemotherapeutic agent has yet proved effective. There is ample experimental and clinical evidence that sulphonamides and penicillin do not alter the course of uncomplicated influenza; but there is equally clear evidence that these drugs have a definite place in the treatment of secondary bacterial pulmonary conditions. Disagreement about their clinical value in influenza may have arisen for several reasons. With secondary bacterial pneumonia there is no way of judging the severity of the viral infection; and if death results, this is usually attributed to incapacity of sulphonamides to cure, whereas the lethal factor may have been not bacterial but viral. Moreover, sulphonamides are not always prescribed in sufficient doses. It is by no means rare for manifestations of inflammatory lung disease to persist, after a short course of chemotherapy, into convalescence; yet when a further, and full, course is given, the infection is controlled. Apparent failure of sulphonamides can often be traced to faults of technique in their exhibition.

Detailed investigation into the mechanism of the sulphonamides in combined infections with the influenza

1. Williams, G. C., Swift, S., Vollum, R. E., Wilson, G. S. *Month. Bull. Min. Hlth & E.P.H.L.S.* 1946, **5**, 17

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virus and bacteria have indicated that the severity of the viral process is unaffected by superimposed bacterial pneumonia.[1] Conversely, sulphonamides exert their antibacterial action even in the presence of a rapidly multiplying influenza virus and of extensive pulmonary exudate. This is probably because the virus, though destroying the ciliated cells of respiratory epithelium and so probably lowering resistance to bacterial invaders, does not interfere with the activity of the phagocytic cells which are important in chemotherapy. There is thus good reason for continuing to treat specifically the bacterial pneumonic complications of influenza. We may hope thereby to lower the risk of death, provided that the viral infection itself is not too severe. The white-cell count in conjunction with the clinical picture is sometimes a useful guide to the patients most likely to benefit from chemotherapy: leucopenia suggests that the infection is predominantly viral and not susceptible to this treatment, whereas a leucocytosis favours the chance of a good response.

JOURNALS OF THE BRITISH MEDICAL ASSOCIATION

WE learn with regret that Dr. Gerald Horner is to retire at the end of this year from the editorial chair of the *British Medical Journal* which he has occupied with so much distinction since 1928. He will be succeeded by Dr. Hugh Clegg, the deputy editor. Meanwhile the staff of the journal has been brought up to peace-time strength by the return from the R.A.M.C. of Dr. Harvey Flack, assistant editor, and by the appointment of two new subeditors, Dr. E. G. Murphy and Dr. D. Swinscow. The responsibilities of the editor will be increased in January by the publication, under his general direction, of two important new journals, entitled *Abstracts of World Medicine* and *Abstracts of World Surgery, Obstetrics, and Gynæcology*. Brigadier G. W. M. Findlay, of the Wellcome Research Institution, will edit them, with the assistance of Dr. S. S. B. Gilder, who as prisoner-of-war in Germany acquired varied surgical experience and a knowledge of various languages.

Of the association's specialist journals the *Archives of Disease in Childhood* (which now incorporates the *British Journal of Children's Diseases*) is edited by Dr. Richard Ellis, newly elected professor of child health in the University of Edinburgh; the *Journal of Neurology, Neurosurgery, and Psychiatry* by Dr. E. A. Carmichael; and the *British Heart Journal* by Dr. Maurice Campbell and Dr. Evan Bedford—the last being published with the Cardiac Society. The *British Journal of Industrial Medicine*, with Dr. Donald Hunter as editor, is produced in conjunction with the Association of Industrial Medical Officers, and the *Annals of Rheumatic Diseases*, in charge of Dr. C. W. Buckley, with the Empire Rheumatism Council. The latest additions to the list are the *British Journal of Pharmacology and Chemotherapy*, with Prof. J. H. Gaddum, F.R.S., as chairman of the editorial committee, published quarterly with the British Pharmacological Society, and *Thorax*, edited by Mr. N. R. Barrett and Dr. J. G. Scadding, published with the Association for Study of Diseases of the Chest. The *British Journal of Social Medicine*, under the editorship of Prof. F. A. E. Crew, F.R.S., and Prof. Lancelot Hogben, F.R.S., is to come out in the New Year.

In the secretariat of the B.M.A. Dr. Charles Hill has Dr. A. Macrae and Dr. L. S. Potter as his assistants. To these have now been added Dr. E. Claxton, of Sutton Coldfield, and Lieut.-Colonel D. P. Stevenson, R.A.M.C., while Dr. Agnes Kelynack, a temporary assistant secretary since 1944, has joined the permanent staff. Dr. E. R. C. Walker has lately been appointed Scottish secretary in succession to Dr. R. W. Craig, and Mr. John Pringle, deputy editor of the *Listener*, has become press officer to the association.

1. Harford, C. G., Smith, M. R., Wood, W. B. *J. exp. Med.* 1946, **83**, 505.

TUBERCULOSIS IN THE COLONIES

TUBERCULOSIS is now widespread among many peoples to whom it was formerly almost unknown—notably the Africans and American negroes, the West Indians, the Malayans, and the Indians. A vivid impression of its ravages is obtained from a summary compiled by Prof. S. Lyle Cummins,[1] a pioneer and life-long student of the subject. Much of the monograph is devoted to an account of work by many different investigators in Africa, but there are references to Cyprus, India, Burma, the United States, and the West Indies.

The picture which emerges is gloomy. Africans are hypersensitive to the tubercle bacillus, with so little control of infection that manual work in the gold-mines breaks down their unstable defences, and with so little resistance to overt pulmonary tuberculosis that recovery, even in the restricted sense applied in Britain, is rare. At one end of the scale of susceptibility are the Senegalese soldiers in France during the war of 1914–18, carefully observed by Borrel,[2] who were taken to an infective environment from their own country, in which tuberculosis was almost absent, and who died in great numbers of a disease they could not defeat; the form was the acute generalised tuberculosis found characteristically in European infants and susceptible laboratory animals. Those who survived were probably rather more resistant than those who died, and natural selection would therefore operate towards the breeding of a race with rather higher resistance. At the other end of the scale are the negroes of the United States, whose death-rate, though still higher than that of whites, is decreasing with the general fall. In these negroes natural selection is further advanced, and the race is relatively resistant. Between the Senegalese and the American negroes lie the mass of indigenous Africans, more susceptible than the Europeans and increasingly subject to infection. That the majority of Africans control primary infection is proved by the observation that most surviving adults are positive to tuberculin but are not diseased; but it is equally true that a far greater proportion of Africans than of Europeans fail to control primary infection, become diseased, and die.

The gravity of the position, especially in urban communities, has been recognised by the government of Tanganyika Territory, who have lately decided to extend the tuberculosis organisation directed for the past twenty years by Dr. H. N. Davies at Kibongoto.[3] It was also recognised by the medical services in the late war, as Cullinan [4] has indicated. The incidence of the disease is not, of course, determined solely by susceptibility of the community; on this basis the high rates constantly found in the Royal Navy [5] would be inexplicable. Environment, especially opportunity for close contact (as in the Navy), malnutrition (as at Belsen), and unfavourable conditions of work (as in African gold-mines), is the other obvious factor.

More knowledge is needed; but in the meantime tuberculosis is a pressing human and social problem, and the question is always, what is to be done? Inaction might in time provide a partial solution, by breeding out the susceptibles; but to accept such a measure of despair would be indefensible. Extensive social measures

1. Cummins, S. L. Empire and Colonial Tuberculosis: a General Survey of the Problem. London: National Association for the Prevention of Tuberculosis. Pp. 59. 5s.
2. Borrel, A. *Ann. Inst. Pasteur*, 1920, **34**, 105.
3. *Tanganyika Standard*, June 15, 1946.
4. Cullinan, E. R. *Trans. R. Soc. trop. Med. Hyg.* 1946, **39**, 353.
5. *R. Nav. med. Bull.* 1945, no. 20, p. 1.

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are required if the disease is to be checked. Opportunity for infection must be reduced by social, educational, and economic means; malnutrition by agricultural reform and improved distribution; and conditions of work by legislation and enlightenment. Of the more direct methods, immunisation by B.C.G. or other vaccines needs early trial; the memorandum recently prepared by Prof. W. H. Tytler for the National Association for the Prevention of Tuberculosis [6] encourages the hope that B.C.G. could be used effectively in the tropics; and the discovery by Russian workers [7] that the vaccine may be kept for long periods in the dry frozen state may remove the major administrative disabilities of present schemes for its use.

In treatment, the standard procedures have sometimes proved disappointing in the tropics, because primitive peoples do not yet understand the importance of long-continued care. But this should not discourage their application, under the best conditions possible.

STYPTIC FROM SEAWEED

WHEN seaweed is broken in the sea the injury is healed by contact of the plant juices with the calcium ions of the water. The substance responsible is alginic acid, which is a polymer of *d*-mannuronic acid and resembles cellulose in chemical structure. Alginic acid salts are used in industry as thickening and binding agents, and fine filaments and foams can be produced; the usual source is an extract of the seaweed *Laminaria digitata*, and sodium and calcium salts are the important forms. Sodium alginate solution can be sterilised by autoclaving. When applied to raw tissue surfaces, it reacts immediately with the ionised calcium, to form a clot or layer of calcium alginate; this material acts as a styptic, and has the advantages that it is absorbable, has no deleterious action on the surrounding tissues, and, so far as is known, does not interfere with the action of drugs like penicillin; moreover, dilution with plasma does not interfere with the formation of calcium alginate. Another method is to prepare calcium alginate by adding to sodium alginate solution a soluble calcium salt to produce thin films in situ; or a foam or plastic sheet can be prepared. Calcium alginate filaments can be prepared as an absorbable hæmostatic gauze for application to oozing surfaces. Blaine, Dollar, and Sorsby [8] have described the use of calcium alginate in scleral wounds, but consider that in this site it compares unfavourably with fibrinogen. Smith [9] has reported good results with powdered alginic acid as a styptic, after tooth-extraction and other minor surgical procedures in the mouth. It is evident that these alginate products will be a useful alternative to the other absorbable hæmostatics or fixatives that have been developed during the war.

Fibrinogen is used to form fibrin films for the arrest of hæmorrhage, and it can be employed as a fixative in plastic surgery; it is, however, expensive and cannot be heat-sterilised. Oxidised cellulose gauze swells and becomes sticky when blood-soaked, and it does not depend for its action on the clotting of blood within the meshes; it is absorbable and is not invaded by fibroblasts, so that scarring is minimal.[10] Here, too, heat cannot be used for sterilisation, which is usually effected by immersion in formalin. Alginates, on the other hand, are relatively cheap, and can be sterilised by heat; gauzes of various absorption rates can be manufactured, and the starting material—sodium alginate—is stable. There is evidence that clots of calcium alginate are invaded by fibroblasts, but its action on scar tissue has not yet been described. When supplies become more plentiful, it will be interesting to see whether it can be used in hæmorrhagic diseases, such as hæmophilia, and to control oral hæmorrhage after tooth-extraction, especially since snake venoms have proved on the whole disappointing.

6. See *Lancet*, July 27, p. 138.
7. Leschinskaya, E. N. *Amer. Rev. Soviet Med.* 1946, **3**, 210. Cited by Tytler, W. H. *Lancet*, August 3, p. 180.
8. Blaine, G., Dollar, M., Sorsby, A. *Trans. Ophthal. Soc. U.K.* 1944, **64**, 187.
9. Smith, C. A. H. *Science*, 1946, **103**, 634.
10. Frantz, V. K., Clarke, H. T. *Ann. Surg.* 1944, **120**, 181.

H. G. WELLS

A LATTER-DAY prophet, Wells increased our perception of the past, the present, and the future. Many of his ideas are now part of our mental daily life, while the central theme of his teaching has begun to sound like a platitude. He believed in education as the only hope of giving men control over themselves and hence of their own inventions. "The conviction grew continually stronger with him that man must order himself as a political animal or perish," and "every effort of his multifarious writing became consolidated upon emphasising the necessity that nations should sacrifice some part of their sovereign rights in the creation of a world State." [1] His first book was a manual of biology, and from the imaginative tales which opened so many peoples' minds to the possibilities of science he turned to novels which became more and more frankly sociological. His supreme effort in direct education was made after the first world war, when with collaborators he produced the trilogy, *The Outline of History*, *The Science of Life*, and *The Work, Wealth, and Happiness of Mankind*. His *Shape of Things to Come* was another arresting work, and was translated to millions through the cinema. As he grew old his propaganda became less effective, partly because it was more explicit; but what is more astonishing is that his spirit remained so ardent in flesh so frail. His last work, *Mind at the End of Its Tether*, refers to a familial fatty degeneration of the heart which ended the lives of his forebears and was one of the "complications" of his own "never very sound body"; he was also, one gathers, a diabetic; and in early years it was tuberculosis that diverted him from teaching to writing. The life lived apparently by a man of outstanding physical vigour and tireless energy, and extending to 79 years, was thus handicapped by at least two serious ailments.

To judge the place of Wells in the life of his time it is necessary, as the *Times* says, "to retrace the years and to recall the responses of successive generations to the intellectual challenges he hurled at them. Beyond all question he gave stimulus after stimulus to thought. The flushing torrent of his ideas left . . . few tranquil pools for the reflective reader. Yet as an urgent and genuine seeker after truth he must have persuaded multitudes to join him in his quest." [2] The interpreter of evolution was in fact a great leader of men, and his message was as important as he supposed.

Dr. OTTO MAY, chairman of the British Social Hygiene Council, and until his retirement principal medical officer of the Prudential Assurance Company, died on August 15 at the age of 67.

1. *Manchester Guardian*, August 14, p. 4.
2. *Times*, August 14, p. 5.

TRAFFIC IN DANGEROUS DRUGS.—The Advisory Committee on Traffic in Opium and other Dangerous Drugs has resumed the issue of summaries of illicit transactions and seizures of narcotics, which has been delayed during the war years. The summaries for the years 1942–45 deal with seizures of raw opium, prepared opium, morphine, heroin, cocaine, and indian hemp, and cover Europe, Asia, Africa, America, and Australia. The report bears testimony to vigilance on behalf of world-wide administrations in tracking out centres of illicit manufacture and exposing clandestine traffic in habit-forming drugs. It is interesting to note that indian hemp, in the form of hashish, was seized in considerable quantities in Egypt, and in the form of marihuana cigarettes in North and South America, while Palestine also was not immune from illicit traffic. In 1942 4689 kg. of hashish in all were seized in addition to marihuana, as such, and in cigars and cigarettes.

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Special Articles

ADVERTISING PATENT MEDICINES

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DEPUTY COUNTY MEDICAL OFFICER, DORSET

THE medical profession has not been backward in calling attention to the obvious barriers which prevent large numbers of people from attaining full health, but there are less conspicuous obstructions which deserve more attention than they have received. One of these is the false learning unavoidably imbibed by the public from patent-medicine advertisements.

For many years past considerable concern has been expressed about the methods adopted by the manufacturers of patent medicines to sell their wares, and about the gullibility of the public who repay the manufacturers so handsomely for their expenditure on propaganda. An estimate of the extent to which the public drug themselves with advertised products was published by Davies (1944). My object here is to provide further ammunition for those who wish to draw attention to the less desirable aspects of this trade. It should be clear from the start that what is criticised is not the patent medicines, however much some of them may deserve criticism, but the advertisements which tend to give the public so many misleading ideas.

The scope of the present investigation was not large. It consisted merely in an analysis in detail of the advertisements appearing in two consecutive issues of a weekly provincial newspaper. About 40% of its space is taken up by news and 60% by advertisements, including the usual small advertisement section and the advertisements officially sponsored by Government departments.

The space taken by patent-medicine advertisements was 10% of the total printed matter, or a quarter of the space given to news. Excluding the space taken by Government departments, 25% of the total advertising space was taken by advertisements of patent medicines and ointments. The advertisements of ointments, though less numerous, are often as misleading as the advertisements of patent medicines. They will not be referred to again, as they were not included in this investigation.

The patent-medicine space was about equal to the total space taken by seven separate Government departments, and ten times greater than the space taken by the Ministry of Food—the only department offering useful advice to the public on subjects related to health. No space was taken by the Ministry of Health.

ANALYSIS OF ADVERTISEMENTS

In all, twenty patent medicines were advertised. Eight of these were given space in both issues of the paper, making a total of twenty-eight separate advertisements. The indications for self-medication given in these advertisements numbered 69, which gives an average of between 3 and 4 indications per product. The average does not give a true picture, as one manufacturer lists 21 indications for his medicine (a laxative), and another, more ethical, prints no indications for his salts, but states unequivocally that they are necessary for health. The variety in the number of indications for the various products was as follows :—

Products	*No. of indications*	*Products*	*No. of indications*
1	0	2	7
3	1	2	9
4	2	2	10
1	3	1	19
1	4	1	21
2	5		

Of the products which rely on 1 indication only, claim is made for the first to cure obesity, the second constipation, and the third limping. It is not surprising that the third is described as a wonder tablet. Of the 69 indications, 40 appeared only once, 16 twice, 4 three times, 5 four times, 2 five times, and 1 six times. Needless to say, the indication which appeared six times was constipation. Bracketed for second place in popularity came headaches and joint pains. Indigestion, muscular pains, rheumatic pains, and lumbago shared third place, while backache, neuralgia, and acidity came in fourth. It is impracticable to mention all the also-rans, but among the more outstanding were gasping, choking, intestinal ulceration and fermentation (apparently regarded as equally serious), asthma, nerviness, dizziness, depression, sleeplessness, blurred vision, bloodshot eyes, pimples, stomach pain, morning sickness, colds, influenza, hay-fever, sciatica, gout, irritability, urinary troubles, bladder troubles, gravel, fretfulness, boils, cramp, eczema, rashes, ulcers, and varicose legs.

Pain of one sort or another is mentioned forty times in these advertisements, whereas the varieties of symptoms which may be grouped under the term "indigestion" obtain only twenty-two mentions. A further eight indications cover intestinal complaints other than indigestion—from bad breath to piles.

Of the 20 medicines advertised, 9 are laxatives, 4 analgesics, 3 anti-indigestion remedies, and the remaining 4 are for coughs, kidneys, blood impurities, and vascular disorders.

I have classified the advertisements into four groups :—

	Products
(1) Dangerously misleading in at least one respect	5
(2) Misleading, and possibly harmful	8
(3) Not definitely misleading, but excessively optimistic	2
(4) Probably useful for the purpose indicated	5

Of the 13 products in groups (1) and (2) 5 are laxatives, 2 analgesics, 2 anti-indigestion medicines, 1 a cough medicine, 1 a blood tonic, 1 a medicine for the kidneys, and 1 a medicine for vascular disorders.

Advertisements in Group (1).—It surely cannot be considered other than dangerously misleading to inform the public that the fight against asthma can be won with one sure blow, and that normal breathing returns and distress vanishes after taking a particular nostrum. It is equally misleading to claim that an analgesic can banish influenza overnight, and that it strikes deep at the underlying causes of pain and illness. It is certainly far from advisable for the public to put their faith in tablets which are said to strengthen and flush out the kidneys and should on that account be used for urinary and bladder troubles, gravel, and scanty or too frequent urine. Finally, I have included in this group those advertisements which claim that intestinal ulceration can be cured or alleviated by the products concerned. One of the advertisers in this group emphasises that his preparation, which is described as a modern remedy, is available to all without prescription, thereby implying that the advice of a doctor for a serious complaint is not necessary.

Advertisements in Group (2).—The following exhortations occur in the 8 advertisements I have included in group (2) :—

"Beat indigestion anytime and everytime it strikes . . . with fifteen indigestion-taming ingredients."

"Throw poisons out of the system . . . generous formula deals with all the ills that put people off the job."

"Look to your nerves" (a nerve-building medicine recommended for neuritis).

"Slim while you sleep."

"Remove blood impurities—root cause of blood and skin complaints."

"Cool and cleanse the blood-stream from teething-time to fourteen years."

"Stop limping."

"Wake up your liver bile."

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EXTENT OF SELF-MEDICATION

A study of the advertisements gives no indication of the extent to which the public buy and use these products. In his inquiry in Bristol Davies (1944) discovered that practically 75% of the persons questioned were taking medicines other than under medical advice. Those taking laxatives and those taking analgesics were about equal. This is not out of line with the relative amount of advertising space taken by these two types of product, as, though more laxatives are advertised, the analgesics are, on the whole, given more forceful copy. What is surprising is that comparatively few of the persons questioned in Bristol were taking anti-indigestion medicines, which have nearly as much advertising space as the analgesics and are given equally forceful boosts. It is not so surprising that few "preventives" (vitamins, iron, &c.) were being taken, as these potentially useful preparations get very little advertising space compared with the three big groups of patent medicines.

COST OF PATENT-MEDICINE ADVERTISEMENTS

In 1938 the estimated cost of advertising patent medicines in the press was £3,692,856 (Bishop 1944). This figure is 11% of the total cost of all newspaper advertisements. It is greater than the amount spent on any other individual group of products, except foodstuffs, which exceed it by a mere £200,000. By far the largest proportion of the expenditure on advertising foodstuffs was in connexion with health and baby foods, some of which are advertised as though they were patent medicines. The amount spent on advertising alcoholic drinks was only a third of that spent on patent medicines, and on cigarettes less than half.

Analysis of the expenditure on patent-medicine advertisements shows that laxatives lead the field with £650,000. Indigestion remedies cost £370,000, and aspirin and pain-cures £360,000.

Expressed as a percentage of total retail sales, the advertising cost of the group of products in which patent medicines are placed was 34%—by far the most expensive advertising. The figure for foodstuffs was 0·86%. A comparison of advertising and production costs for patent medicines does not appear to be available. It might be interesting if it were.

In 1938 the total sum spent on dispensing National Health Insurance prescriptions and appliances was £2,660,850—i.e., two-thirds of the sum spent on advertising patent medicines.

CONTROL OF PATENT-MEDICINE ADVERTISEMENTS

Under the Venereal Disease Act, 1917, the advertising of medicines for the treatment of venereal diseases is prohibited. The Cancer Act, 1939, prohibits the advertising of medicines for cancer. Under the Pharmacy and Medicines Act, 1941, advertisements of remedies for the following diseases are prohibited: Bright's disease, cataract, diabetes, epilepsy or fits, glaucoma, locomotor ataxy, paralysis, and tuberculosis. The advertising of abortifacients is also prohibited under this Act.

Section 6 of the Food and Drugs Act, 1938, lays down that a person who publishes an advertisement which falsely describes any drug, or is otherwise calculated to mislead as to its nature, substance, or quality, shall be guilty of an offence. Under the Defence (Sale of Food) Regulations, 1943, it is also an offence to publish an advertisement which misleads as to the nutritional or dietary value of a food; and, according to the Food and Drugs Act, 1938, an article shall not be deemed not to be a food by reason only that it can also be used as a medicine.

Many manufacturers of patent medicines are members of the Proprietary Association of Great Britain, which has issued a code of rules for advertising. One of the objects of the rules is to ensure that advertisements are of such a character that they do not mislead the public or contain statements which would permit criticisms to be levelled at proprietary medicines as a whole, or which may cause public confidence in proprietary medicines to be impaired (Chapman 1942). This code of rules was in force for some years before the passing of the Pharmacy and Medicines Act, 1941, and in some respects the rules are in advance of the law. It would be interesting to know which manufacturers are members of the association, so that their advertisements could be compared with those of the non-members.

The Ministry of Food, in consultation with the Medical Research Council, has drawn up for food manufacturers a suggested code of practice in framing labels and advertisements. Among other recommendations the following advice is given about claims connected with the vitamin or mineral content of a food: "Unless the amount of the food that would ordinarily be consumed in one day contains at least one full daily requirement of the vitamin or mineral, no reference is justified to the value of the food for the prevention or cure of disease due to the lack of the vitamin or mineral present in the food."

As a further check on the publication of misleading advertisements, the Newspaper Proprietors' Association adopted certain rules about the acceptance of proprietary-medicine advertisements by newspapers represented in the N.P.A. (*British Medical Journal* 1943). The rules appear to be closely related to the Proprietary Association's code. Possibly not all newspapers are bound by these rules. Certainly misleading advertisements continue to appear.

DISCUSSION

In this country the sale of drugs and medicines of all kinds has been an open trade. It is only since 1868 that the sale of poisons has been controlled. The advertising and sale of patent medicines were the subject of inquiry by a select committee in 1912. The concluding paragraph of their report was as follows:—

"For all practical purposes British law is powerless to prevent any person from procuring any drugs or making any mixture, whether patent or without any therapeutical activity whatever (so long as it does not contain a scheduled poison), advertising it in any decent terms as a cure for any disease or ailment, recommending it by bogus testimonials and the invented opinions and facsimile signatures of fictitious physicians, and selling it under any name he chooses—on the payment of a small stamp duty—for any prices he can persuade a credulous public to pay."

The law has been strengthened since then, but it is not nearly so effective as it might have been, had Dr. Addison's Proprietary Medicines Bill not been withdrawn from Parliament in 1920. In this Bill provision was made for the establishment of a register of proprietary medicines, and the sale of unregistered medicines was to be prohibited. The Minister of Health was to have been empowered to remove from the register any injurious medicine or appliance.

Possibly another attempt should be made to strengthen the law regarding the manufacture and sale of patent medicines, as it is perhaps over-optimistic to expect that good sense and good taste will eventually prevail over prejudice and ignorance. In so far as the control of misleading advertisements is concerned, it seems that section 6 of the Food and Drugs Act, 1938, gives power to take effective action, though the legal difficulties in the way of bringing a prosecution to a successful conclusion would be formidable.

In some other countries the interests of public health take precedence in cases where they may be in conflict with commercial speculation. The Proprietary or Patent Medicine Act of Canada states:—

"No proprietary or patent medicine shall be manufactured, imported, exposed, or offered for sale or sold in Canada if the

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article be represented as a cure for any disease, or if any false, misleading, or exaggerated claims be made on the wrapper or label, or in any advertisement of the article."

This country is peculiar in that there is a widely held belief that a bottle of medicine is something no healthy person should be without. This trust in medicines is not a new thing. Oliver Goldsmith wrote :—

"The English are peculiarly excellent in the art of healing. There is scarcely a disorder against which they are not possessed of an infallible antidote. The advertising professors here delight in cases of difficulty. You will find numbers in every street, who, by levelling a pill at the part affected, promise a certain cure."

Though it must be agreed that the cost of persuading members of the public to buy patent medicines is out of all proportion to the good these preparations may do, the point of view put forward by Bishop (1944) would probably obtain considerable popular support :

"The consumer may not always appear to choose very wisely, but perhaps he would prefer to risk mistakes and occasional deception in the exercise of his own free choice rather than submit in the matter of his daily purchases to the judgment of some central authority, however wise and benevolent."

There is no getting over the fact, however, that the wording of some advertisements is deliberately misleading. This would not matter much if the public were reasonably well informed, but unfortunately the public appear to be both gullible and ignorant. The defence of an advertising expert is worth quoting in full :—

"People are very rarely misled by advertisements except when they wish to be misled. And few advertisements, in spite of all appearances to the contrary, are really intended to mislead. There is a robust and saving common sense, and a humour and proportion about the ordinary consumer which are better understood by those who seek his custom than by those who are so anxious to protect him against himself. Of course freedom is dangerous, and free competitive advertising is strong meat, not always easily digestible by delicate stomachs. For that reason it is rightly to be regarded with caution, and used with a sense of responsibility. But freedom to persuade, in economic as in religious or political matters, is the right food for a free society. Its benefits certainly cannot be measured in pounds, shillings, and pence." (Bishop 1944.)

It may be the view of some that newspaper advertisements are harmless because few if any people bother to read them. Those who doubt the power and influence of advertising perhaps do not realise the extent to which manufacturers rely on advertisements to increase sales. Messrs. J. Lyons and Co. Ltd. have revealed that, before they started advertising their swiss rolls on a big scale, they were selling 10,000 a week. Shortly after advertising began the sales rose to 600,000 a week.

Short of a compulsory censorship of advertisements—a procedure which should be unnecessary in any country where the public is well informed—what can be done to counteract the harmful advertisements? These presumably take the form they do because the manufacturers are unable to agree that their advertisements should be consistent with modern pharmacological and medical knowledge—admittedly this might lead to a great loss of trade—and because newspaper proprietors do not always insist on every patent-medicine advertisement being scrutinised by a reputable medical authority.

Perhaps the most promising lines of attack would be (1) for general practitioners to talk over with their patients the question of self-medication with patent medicines; and (2) for some public body to insert health advertisements in the newspapers as a direct counterblast to the patent-medicine manufacturer. Possibly the advertising space now taken to enlighten the public about venereal disease might with advantage be used occasionally for a short homily on the treatment of constipation. By these means the public might gradually be weaned from their belief that most patent medicines are a kind of cocktail for making life tolerable in these times.

SUMMARY

The advertisements of patent medicines appearing in two consecutive issues of a weekly provincial newspaper are analysed.

The cost of patent-medicine advertisements and the control at present exercised over such advertising are discussed.

The conclusion is reached that many advertisements are misleading, and suggestions are made for counteracting the harm done by them.

REFERENCES

Bishop, F. P. (1944) The Economics of Advertising, London.
British Medical Journal (1943) ii, 462.
Chapman, H. E. (1942) The Law Relating to the Marketing and Sale of Medicines, London.
Davies, J. N. P. (1944) *Brit. med. J.* ii, 87.

MUNICIPAL SPECIALIST SERVICE

THE BRISTOL SCHEME

IN 1938 the Bristol city council adopted a new policy for the employment of specialists at their hospitals and health centres. Till then specialists had been engaged for specific duties and paid on a sessional basis or by honorarium based on the usual sessional rate of payment. Under the new scheme surgeons, physicians, and obstetricians and gynæcologists have worked as teams under the directorship of the university professor of their group. Three or four teams were organised in each group, and a sum of money was paid to the professor for distribution between the members of his teams according to services rendered. One of the conditions was that the teams should meet regularly as a committee at the municipal hospital and make suggestions for the improvement and development of the services, and the many useful recommendations made at these meetings have been appreciated by the administrative staff of the public-health department.

This scheme, which has many advantages, has worked well in spite of the war, which reduced the number of consultants and increased their work. But now the expansion of the service is demanded by the needs of a comprehensive school medical service, of health centres, and of an E.M.S. hospital recently taken over by the city. At the same time the university has had to reorganise its medical teaching so as to train more specialists, and this will decrease the number of teaching staff available for treatment of patients, while the professors of the medical faculty will be less able to take part in the supervision of corporation services.

A joint advisory committee, on which the city council, the university, and voluntary hospitals were represented, was therefore constituted to consider appointments to hospitals and health-centre staffs. The medical faculty of the Royal Hospital suggested certain general principles for the organisation of the specialist services in the city hospitals, voluntary and municipal, which the joint committee accepted in the following form :

(*a*) The consultants and other medical personnel should be organised into units to which the work would be allocated.

(*b*) Each unit should be the clinical team, which normally should consist of two members of the visiting staff (preferably a senior and a junior), a registrar, and a house-officer, with or without clinical assistants.

(*c*) Where the work of a department or specialty is greater than can be dealt with by one unit, and a second unit is created, each unit should be equal in status.

(*d*) University professors and heads of departments should be in general charge of teaching, but each team should be entirely responsible for its clinical work.

(*e*) Registrars should be appointed as members of a team and not to a department.

(*f*) Outpatient consulting sessions should be held at the Royal Hospital by all the teams. The members of all teams should be on the Royal Hospital medical staff, irrespective of whether they have beds in the hospital.

(*g*) The beds allocated to a team should be, as far as possible, in one hospital.

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Last month the city council approved a report based on these principles for the staffing of its municipal hospitals and health centres. The cost of specialist services to the corporation when this scheme comes into full operation will be £22,000 per annum—a yearly increase of about £11,000.

HOMŒOPATHY AND THE BILL

Mr. ANEURIN BEVAN, the Minister of Health, with Dr. J. A. Charles and Mr. J. M. K. Hawton received a deputation on June 27 from the British Homœopathic Association, which included Dr. Alva Benjamin, Sir John Weir, M.B., and Dr. W. Lees Templeton. The deputation said that many people in all parts of the country wished to have homœopathic treatment, which should therefore be provided for them under the National Health Service. To ensure that this demand was adequately met they asked that certain homœopathic hospitals should be designated as teaching hospitals under the Bill, and that the homœopathic doctor should not be debarred from practice in an area on the grounds that there was already a sufficiency of non-homœopathic doctors.

In reply, Mr. Bevan said he hoped that the homœopathic hospitals, in general, would come into the National Health Service scheme, and he would try to preserve their special character and atmosphere, like that of other special types of hospital, by making suitable appointments to the management committees, &c. He thought, however, that the regional hospital boards would have to look at the services in any given area before a conclusion could be arrived at about any particular hospital. He could not give any assurance as regards designating homœopathic hospitals as teaching hospitals; it was not his function to determine what kind of training was to be given in teaching hospitals, and the university authorities must come into this question. There would be no discrimination against homœopathic methods of practice; equally, of course, there would be no discrimination in favour of them, or of any other particular clinical methods.

Many of these problems, the Minister added, might not prove so formidable in practice as they might seem in theory, and he would gladly ask the association to meet him again at a later stage when the preparations were being made to bring the Act into operation.

On Active Service

AWARDS

THE following awards have been made in recognition of gallant and distinguished services in the Far East:

C.B.E.

Brigadier C. H. STRINGER, D.S.O., O.B.E., L.R.C.P.I., late R.A.M.C.

O.B.E.

Lieut.-Colonel D. C. Chopra, M.B., I.M.S. (since died).

M.B.E.

Major S. M. BANFILL, R.C.A.M.C.
Major J. N. B. CRAWFORD, R.C.A.M.C.
Major C. W. MAISEY, M.R.C.S., R.A.M.C.
Major J. A. G. REID, R.C.A.M.C.

MENTIONED IN DESPATCHES

COMMANDS AND STAFF

Colonels.—E. PERCIVAL, D.S.O., M.C., late R.A.M.C.; V. H. WARDLE, M.C., late R.A.M.C.

R.A.M.C.

Brigadier D. S. MIDDLETON.
Colonels.—J. BENNET, J. TAYLOR, O.B.E.
Lieut.-Colonels.—J. W. CRAVEN, M.C., W. G. HARVEY.
Majors.—H. M. S. G. BEADNELL, M.B.E., P. R. GRAVES, M.B.E., H. HENDERSON.
Captains.—J. E. A. BARTLETT, M. H. CHURCHILL, T. R. S. CORMACK, E. K. CRUICKSHANK, J. G. JESSON, W. H. McDONALD, J. A. MARK, T. B. SMILEY, M.C., R. B. C. WELSH.

R.C.A.M.C.

Major G. C. GRAY.

The President of the United States has conferred the degree of officer in the Legion of Merit on Major-General Sir Edward Phillips, K.B.E., C.B., D.S.O., M.C., M.B., late R.A.M.C., and the bronze star medal on Colonel Thomas Parr, M.D., R.A.M.C.

In England Now

A Running Commentary by Peripatetic Correspondents

YOU will remember King Aethelbeorht (the vulgar call him Ethelbert), who married Bertha, and received St. Augustine under an oak tree, and became the first Christian king of England. Well, they had Laws even in those days, and I want to call the attention of Mr. Paling, Minister of Pensions, to their excellence. For example, Aethelbeorht says that "if the eye and foot of a servant are destroyed by wounds his full value shall be paid." The Ministry, allowing for the difference of outlook in so many hundred years, says much the same thing, but you have to lose the eye and a leg above the knee to be sure of 100%. Of course, the comparison between Aethelbeorht and Mr. Paling is not perfect. Aethelbeorht is talking about single payments in cash or cows while Mr. Paling is concerned with weekly payments. But we can make some sort of comparison. Here are some of the things for which compensation of 12*s.* was due in A.D. 600—if an ear is struck off, if the power of speech is injured, if the belly is wounded, if the thigh is broken. That was Aethelbeorht's code. Now look at Mr. Paling's. Loss of an ear 7% only, but complete loss of speech would probably be 100%, and abdominal wounds and thigh fractures would be judged upon the amount of disablement produced. The comparison is in favour of Mr. Paling, and Aethelbeorht appears rather stolid and unimaginative.

On the other hand his Laws did, in other directions, imagine ways of incurring a 12*s.* compensation which would shock Mr. Paling's department. Thus 12*s.* was the proper compensation payable (I expect the King and his relatives shared it) for excessive attachment to a widow, that is, if she was of the third class: a second-class widow cost the offender 20*s.* If the lady was married, and her husband alive, the freeman involved must buy the wife from her husband, and then provide him with a new wife at whatever it might cost him. This seems rather hard upon the husband who was thus deprived of the sanctions of the unwritten law. He might not indulge in physical retaliation, for "if one man strikes another on the nose with his fist" 3*s.* compensation was payable, and if the hæmorrhagic nose was carried to a doctor for treatment a further 30*s.* had to be paid. This argues that the medical treatment of Aethelbeorht's day was not to be lightly borne or, perhaps, that the doctors were so skilled that they were worth a fee of what, in modern money, would certainly be at least £50.

Mr. Bevan ought to be told about this. He is a Progressive (or a backslider, everything depends upon the point of view) and now he is offering a paltry 12*s.* 6*d.* for a whole year's treatment while Aethelbeorht lays it down that we ought to have £50 for treating an epistatic nose, or ought it to be "epistasic"? It is true that Aethelbeorht was a mere Anglo-Saxon, while Mr. Bevan is an obvious Celt, but even Celtic doctors were better paid than we are going to be. For example, for treating a bishop the Celtic doctor could expect a fee of 40 cows, and even a slave was worth 2 cows, or the equivalent in sheep or goats. There are no slaves here nowadays and every man is as good as a bishop, or better. It is abundantly evident that we ought to have at least a capitation fee of 40 cows, according to the Brehon code, which was probably just as much Welsh as Irish, although St. Patrick seems to be mixed up with it somehow. So let us face this upstart Welshman with cries of "back to Aethelbeorht" and "give us our cows."

* * *

Like me, they had obviously come over to Yarmouth for the day. It was late afternoon, and Father, Mother, and Auntie had had enough of it. Three-year-old Binkie, weary and fractious, was lagging behind. Mother turned and spoke sharply to him—"Binkie, if you don't something-or-other I shall something-else; you see if I don't." With the time-stopping sensation of *déjà vu* I knew exactly what was going to happen next: and it did. Binkie tottered forward wildly to catch up, tripped, fell, and lay prone, bellowing to high heaven for comfort and sympathy. Mother, torn between conflicting emotions, jerked him up, petted him, dusted his clothes roughly, wiped his face gently, chid him, and gave him to Father to carry.

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Then I realised that it was literally *déjà vu*: I had witnessed exactly the same situation being acted out scores of times. Indeed, some forty-odd years ago I had been Binkie, and my hands and chin remembered the horrid tingling aftermath of their numbing impact with asphalt, when the world had swung up and hit me.

Revelations never come singly with me. That same evening when I got home I remembered with dismay a job of carpentry in the spare-room which I had promised should be attended to as soon as I had an odd hour to spare. My dream of pipe and book was shattered. Surly and angry with myself for not having done the job weeks ago I seized the tools, and within a couple of minutes had dealt my thumb a real fourpenny one with the hammer. (The sticking plaster is still in situ as I write.) Then it dawned on me that I had hurt myself; literally, I mean. It didn't need Groddeck or Flanders Dunbar to point that out. I had hurt myself even as Alice boxed her own ears when she cheated in the croquet match she was playing against herself. I had to giggle. Had I grown up in forty years? Binkie had hurt himself to gain comfort and love. I had hurt myself to punish myself. Fantastic? Undoubtedly, in the truest sense. I'm beginning to suspect that phantasy governs my life to a far greater extent than I dare contemplate; and I am prey to a growing conviction that accidents don't happen to me accidentally.

And what, may I ask, is Aneurin Bevan going to do about it? Does he propose to arrange things so that Binkie doesn't have to graze his chin to gain love; that I don't have to smash my thumb to satisfy my Id; that asthma and peptic ulcers don't have to play their necessary rôles in the lives of others even more chronically maladjusted to the reality situation? Because I'm not so sure that Binkie and I want a Brave New World in which expressive illnesses will be rendered unnecessary. Nationalise our health if (for urgent political reasons) you really must, but please do leave our individual sufferings to our private enterprise. And please don't turn loose on us a lot of downtrodden medical and surgical contractors who will try to kiss the place and make it well again before we are ready to stop crying. When our Ids demand stones, they don't want bread-poultices. Not until afterwards.

* * *

Perhaps it is good for us sometimes to put ourselves in our patients' place, to discard our cloak of medical superiority and to become an ordinary "next" in another doctor's waiting-room. Waiting to see a dentist is unpleasant, but at least we feel we have a legitimate reason for being there. We aren't dentists. We don't even want to be dentists. It isn't our job. But to sit in another doctor's waiting-room is torture. I pick up some papers, perhaps glance through a couple of last year's *Punch*. What a humiliation to feel that I have come to this. I glance suspiciously around, fearful of seeing a familiar face, fearful of hearing a whisper. "That is Dr. X; I wonder what she has come here for." One feels that one should be above this sort of thing, that it is admitting failure in one's own profession to seek advice about anything, except perhaps teeth and accidents. They are Acts of God and cannot be avoided. Gingerly I finger my neck. Thank goodness I have remembered to remove my stethoscope. Lack of it is some sort of disguise. The other victims are all dressed for the part. They have on their best clothes, hats, gloves, umbrellas even. My gloves are in the car. My hat is in the cupboard at home awaiting its biannual outing to church or inquest. I haven't seen my umbrella for years. I don't feel at all like a patient. I think people are looking at me. It's imagination, of course. They have no thoughts but their own symptoms, but I can't sit here waiting and doing nothing. Why can't I ring the bell and start the ball rolling or the crowd moving? I open my bag, write out my visiting-list for next week, make out a milk form for that old lady with no teeth, put another lead in my pencil, anything to avoid gazing at the ever-increasing crowd. At last I know why patients visiting my surgery have that glazed and haunted look on their faces. Come what may I'll never visit a doctor again. The first attempt has made me ill; the second would finish me off completely. We aren't as tough as our patients, and at last I know it.

Public Health

SMALLPOX AND VACCINATION

W. T. G. BOUL
M.B.E., M.D. Manc., D.P.H.
MEDICAL OFFICER OF HEALTH, URBAN DISTRICT OF THURROCK

W. F. CORFIELD
M.D. Lond., D.P.H.
MEDICAL OFFICER OF HEALTH, BOROUGH OF COLCHESTER

WHILE returning from India a corporal (H. R.), of the Royal Army Medical Corps, assisted in looking after cases of smallpox. He reached his home in Grays, Essex, on Jan. 18, 1946, and visited his nephew (A. R.) next day and again on Jan. 24. On Feb. 11 a doctor drew the attention of one of us to the boy (A. R.), owing to a peculiar rash, and it was clear that he was a typical case of modified variola. He had been first taken ill on Feb. 3 and had had the usual early symptoms and signs of the disease.

On the same day the R.A.M.C. corporal was visited and medically examined. He had had no symptoms of illness and said he was perfectly fit, but on examination three ill-developed pustules were observed upon his back and a small pustule upon one wrist. Variola was diagnosed. Both these patients and all subsequent cases were removed to the Colchester Isolation Hospital.

All routine measures for vaccination on a large scale were at once put into force, as contacts with both cases had been extensive. Though the corporal had returned home on Jan. 18 and lived with his wife and two children, not one of them caught the infection, but only his nephew, whom he had seen only casually, though he had left in the house three gifts (two leather wallets and a silk scarf) that he had brought from India. Both his wife and his children, aged 12 and 8 years, had been vaccinated in infancy.

C. R., the brother of A. R., was next taken ill, and the sanitary inspector (Mr. Rd.) who arranged the disinfection of the houses and bedding of the corporal and his nephew. By some oversight this man had not been revaccinated. The disease was hæmorrhagic, and he died within six days. His wife and little daughter, aged 5 years, were unvaccinated. They were at once vaccinated and removed, as dangerous contacts, to Colchester. The wife (Mrs. Rd.) was taken ill, and smallpox developed eight days after her admission to hospital.

LATER CASES

Further cases followed. On Feb. 27 a general hospital reported that a man (Mr. Ph.) had been admitted during the night with a diagnosis of purpura. He had been taken ill on Feb. 18. He was the second case of hæmorrhagic smallpox, and he died in the isolation hospital eleven days after his first symptoms. This man had been a wholesale bread-roundsman working in many districts of the extrametropolitan area of London.

Strenuous and extensive efforts were necessary to cope with the greatly increased number of contacts and the increasing demands for vaccination by the general public. Inquiries showed that the bread-roundsman's wife (Mrs. Ph.) had had "influenza" about Feb. 2. She obtained no medical advice and recovered on Feb. 7. On March 2 a woman (Mrs. C.) with a suspicious rash, who had been ill since Feb. 26, was found to have smallpox. She was the mother of Mrs. Ph. and had nursed her through her "influenza." A more complete examination of Mrs. Ph. brought to light slight scarring on the face, chest, and arms, most probably due to smallpox pustules. This diagnosis was confirmed by a blood examination.

On March 10 the small son (A. Ph.) of Mr. and Mrs. Ph. developed smallpox and was removed to hospital. During this outbreak one of us (W. T. G. B.) probably had so-called contact disease. Twelve days after some three hours' close contact with Mr. Rd., he had general

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malaise, shivering, and nasal catarrh. The condition cleared completely within fifteen hours.

Meanwhile in the Colchester Hospital a nurse (L.) in the smallpox wards had been taken ill 25 days after she took over duty in these wards. She went to bed with a slight sore throat, headache, and pyrexia (101·8° F). Next day the temperature was 100·2° F, and a morbilliform rash was developing. The temperature fell to subnormal as the rash developed and became general. On the fifth day the temperature rose to 99° F and after that it remained normal. Her symptoms had subsided by the third day; no macules or true rash of any description developed, though she was kept in bed a few days longer. At the end of a week she protested she was quite well, and she returned to duty on the twelfth day.

It was hoped that the outbreak was over, but unfortunately a girl (M. Pe.) living in Southend, whose parents belonged to the Peculiar People, was taken ill on March 16, and a rash quickly developed. It was thought to be chickenpox, and no doctor was consulted. When seen on March 28 she was a typical case of confluent smallpox, and she died the same day. Her parents (Mr. and Mrs. Pe.) had been vaccinated in infancy. They refused revaccination. Her brother (R. Pe.) had never been vaccinated, and for five days longer he refused vaccination, and then, too late, agreed to be done.

On April 1 Mrs. Pe. developed smallpox, and on April 5 Mr. Pe. and R. Pe. also showed signs of the disease. All three were isolated in the Colchester Hospital. Mr. and Mrs. Pe had mild modified attacks, but R. Pe. rapidly became hæmorrhagic and died on April 11.

A neighbour (Mrs. W.), who had helped to nurse M. Pe., was admitted to the hospital with mild modified smallpox on April 7. This was the end of the Grays, Thurrock, and Southend outbreak. One more patient was admitted on April 14 to the Colchester Isolation Hospital. He was a sailor (R. L.) who had recently returned from India to his home in Ilford. His condition was very similar to that of Corporal H. R. He had one typical smallpox pustule and two doubtful ones, and never had any symptoms. He was a contact on board a different ship from H. R., and it may be concluded that his attack had no connexion with the other cases.

It will be seen that, excluding the sailor, the cases were divided into three groups, and no direct connexion could be discovered between them, though it seems probable that all originated from the first case (H. R.), as distances between the groups were short, communication between the Thurrock district and Southend is simple, and contacts are frequent.

The first group consisted of H. R., A. R., C. R., and Mr. Rd.; and, as a subgroup, Mrs. Rd. and L. should be included. The second group was Mr. and Mrs. Ph., A. Ph., and Mrs. C. As the Ph. family live within a quarter of a mile of H. R.'s family, there can be little doubt where the infection arose. Lastly, the Southend group was made up of the Pe. family and their friend, Mrs. W.

Naturally, after the occurrence of the first case, the doctors of the area were warned of the risk of smallpox, and it is worth noting that every case, whether severe or extremely mild, when seen by a doctor came under suspicion at once as a possible case of smallpox, every centre of infection was immediately controlled, and secondary cases were extremely few.

RELATION TO VACCINATION

The table sets out the cases with their ages and vaccination particulars. H. R. and R. L. had been vaccinated and revaccinated. H. R. had been unsuccessfully vaccinated in 1945. Neither of them had any symptoms of illness, and the only signs were a few scattered pustules. L. was a nurse at the isolation hospital who

ANALYSIS OF CASES OF SMALLPOX

Case	Age (yrs.)	Type	Vaccinated	Revaccination	Result
H. R.	36	Modified	I/4	1941/1	Recovery
A. R.	13	Modified	I/1	..	Recovery
C. R.	11	Modified	I/1	C/1	Recovery
Mr. Rd.	32	Hæmorrhagic	5 yrs./4	..	Death
Mr. Ph.	42	Hæmorrhagic	I/4	..	Death
Mrs. Ph.	37	Modified	I/4	..	Recovery
Mrs. C.	67	Modified	I/4	18 yrs./4	Recovery
A. Ph.	9	Modified	C/3	..	Recovery
Mrs. Rd.	33	Modified	C/2	..	Recovery
L.	26	Abortive	22 yrs./1	..	Recovery
M. Pe.	20	Confluent	Nil	..	Death
Mrs. Pe.	54	Modified	I/4	Refused	Recovery
Mr. Pe.	59*	Modified	I/4	Refused	Recovery
R. Pe.	24	Hæmorrhagic	C/3*	..	Death
Mrs. W.	69	Modified	I/5	Refused	Recovery
R. L.	26	Modified	I/1	C/1	Recovery

* After refusing vaccination for 5 days.
I/1, in infancy, 1 mark; C/1, as contact, 1 mark.

was detailed to look after the smallpox cases. She was a case of smallpox sine variolis.

Mr. Rd., Mr. and Mrs. Ph., Mr. and Mrs. Pe., and Mrs. W. had all been vaccinated in infancy and never revaccinated. With Mr. Rd. and Mr. Ph. the immunity thus obtained had not lasted; and, when exposed to a virulent type of smallpox, they showed no resistance. Mrs. Ph., Mr. and Mrs. Pe., and Mrs. W. were more fortunate; their immunity had lasted surprisingly well, and the attacks of smallpox were in none of these cases severe. R. Pe. refused primary vaccination until too late. M. Pe. had never been vaccinated, and the result was disastrous.

Mrs. C. was interesting in that, though she was 67 years old and had been in close contact with Mrs. Ph., vaccination in infancy and revaccination at the age of 18 years led to a very mild modified attack.

Directly Mr. Rd. was diagnosed, his wife and little daughter, neither of whom had been previously vaccinated, were at once vaccinated. Mrs. Rd. developed a definite but mild attack. The little daughter, aged 5 years, though living in the smallpox wards throughout her mother's illness, never showed any signs of the disease but put on weight and left the hospital greatly improved in health.

Samples of blood and pustule crusts from several of these cases were examined by Prof. A. W. Downie, of the University of Liverpool. He found the serum of Nurse L. positive in a dilution of 1–80; and, writing about this case, he said: "I think the result of her serum confirms your diagnosis that she suffered from an abortive attack of smallpox."

ABORTIVE SMALLPOX

It is of interest to study these cases in connexion with what has been called contact disease and has been described by Conybeare (1939), who gives an account of seven well-vaccinated persons who, after contact with a case of smallpox, had symptoms very similar to the prodromal stage of smallpox and then recovered with subsequent lassitude. Two of these patients had skin eruptions which, in one case, were "consistent with a diagnosis of variola." Rolleston (1925) says:

"A special form of modified smallpox is the non-eruptive variety known as *variola sine exanthemate* or *variola sine variolis*. . . . In such cases the onset is severe, with high fever,

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intense headache and backache, and all other prodromal symptoms may be present, including erythematous or petechial eruptions . . . its true nature is shown by its occurrence in an epidemic focus and by the sudden termination of the disease on the third day before the appearance of the papular eruption. Such cases are apt to be encountered among recently vaccinated persons shortly after joining the staff of a smallpox hospital, and several examples have lately been reported among recently vaccinated soldiers (Vorpahl, Klaholt, Kathe)."

Harries and Mitman (1940) describe variola sine eruptione as "smallpox confined to the initial toxæmia occurs in the previously vaccinated. . . . Occasionally a few small and atypical focal lesions may appear and be possibly overlooked."

In view of the so-called abortive case in this outbreak and the extracts quoted above, it seems reasonable to conclude that such cases may show some or all of the prodromal signs and symptoms of smallpox, and that these then fade out without any appearance of the true rash. We suggest that abortive smallpox would be a better and simpler name for the conditions previously described as variola sine eruptione, variola sine variolis, and contact disease.

VACCINATION OF CONTACTS

The present outbreak led to a considerable demand for vaccination. The contacts of H. R. were numerous, and many of them unknown; and A. R., during the first three days of his illness, had attended church services, a Sunday school, a wedding, and a technical school. Vaccination was offered to all known contacts, and a special vaccination session for children was held in the technical school. The public vaccinators were hard pressed, because, besides ordinary contacts, all laundries, libraries, and salvage-collecting personnel were warned. By Feb. 23 the list of known contacts exceeded 1000, and assistance was given by the county medical and nursing staffs.

On March 3 it was decided to open special vaccination centres. Up to this time all contacts had been vaccinated at the public vaccinators' surgeries (except the special clinic held for school-children). By March 9 five centres had been opened. These were greatly appreciated, as the weather had been particularly bad and there had been long queues standing in rain and snow outside the doctors' surgeries. In the five days March 4–9, 15,000 vaccinations were performed in the district. The assistance given by the Government Lymph Establishment at Colindale Avenue, London, N.W.9, was greatly appreciated.

On the whole, everything worked well, yet experience showed where improvements might have been possible. After the first few days it was realised that it would not be possible to reinspect all vaccinated contacts; so the public were informed that the only people who would be seen again a week after their vaccinations were (1) those who had been vaccinated for the first time and whose vaccination had not taken; (2) all infants under the age of one year (for vaccination certificates); and (3) all persons vaccinated by private doctors. The vaccinators by this time consisted of public vaccinators, other practitioners, medical officers on the staffs of health departments, and medical students working under supervision. It was necessary for private doctors' patients to be seen again so that records for payment, &c., might be completed. Some improvement might have resulted from giving known contacts a document that would have given them priority in the queues.

All contacts were vaccinated in three places, and members of the general public in only one. Meanwhile the sanitary inspector's staff had been reinforced, and all contacts were visited daily for seventeen days. Any found to be ailing, however slightly, were transferred to a special contact list and visited daily by a medical officer, and returned to the original list when a negative diagnosis had been made.

As indefinite rashes from vaccination, smallpox, or for some other reason might arise, a ward of 12 beds was held in readiness at the local isolation hospital for the reception of any such cases. Three cases were admitted, and the provision of this ward proved to be a definite safeguard.

A single large room, free of unnecessary furniture, was found to be the ideal vaccination centre, with, if possible, additional shelter for applicants. The queue should be divided into smaller queues according to the number of vaccination teams. Each vaccinating team should consist of a clerical assistant (to whom the patient goes first) to enter particulars on the form, a nurse to prepare arms, the medical officer, and a volunteer to cover the vaccination mark with strapping after drying.

CONCLUSIONS

The following conclusions may be drawn from this experience:

(1) It is desirable that persons in attendance on smallpox patients on board ship should be *specifically* notified to the medical officers of health of the districts to which they proceed when they land in this country.

(2) Vaccination in infancy may protect for very many years, but does not necessarily do so.

(3) It appears likely that one vaccination mark does not protect as completely as two or more. It seems desirable that a primary vaccination should consist of three marks, and a revaccination of at least two.

(4) During an outbreak, when there is a rush to vaccination centres, contacts should be given priority by a system of tickets.

(5) For doubtful rashes an observation ward in the nearest isolation hospital is of great value.

(6) Abortive smallpox would be a good name for the illness now known as variola sine variolis, variola sine eruptione, or contact disease.

Our thanks are due to Dr. T. Stevenson Logan, M.O.H. for Southend, for the information concerning the Southend cases.

REFERENCES

Conybeare, E. T. (1939) *Lancet*, i, 813.
Harries, E. H. R., Mitman, M. (1940) Clinical Practice in Infectious Diseases, Edinburgh, p. 262.
Rolleston, J. D. (1925) Acute Infectious Diseases, London, p. 336.

Detection of Typhoid Carriers

THE monthly bulletin of the Ministry of Health and the Emergency Public Health Laboratory Service last November contained a note on the detection of typhoid carriers, and practitioners may like to be reminded of the suggestions made:

"A chronic carrier may cease to excrete typhoid bacilli for no apparent reason, and may resume doing so without any detectable alteration in his well-being. Epidemiological evidence, although not conclusive, suggests that the intervals of freedom may last for months or even years, but the Vi-agglutination test remains positive during these intervals. It is not proposed that any control, other than that afforded by the Public Health (Infectious Diseases) Regulations, 1927, should be exercised over carriers, and in this connexion the attention of medical officers of health is called to pages 58 to 60 of the Annual Report for 1932 of the Chief Medical Officer of the Ministry where the subject is dealt with.

"The method of detection is, before discharge from hospitals every typhoid convalescent should have a blood test for Vi-agglutinins. If they are absent, no further action need be taken. If present (as might be expected in about one-half the cases) a second test should be made three months later when, if they are no longer present, nothing further need be done. If, however, Vi-agglutinins are present in a titre as high as, or higher than, before, two examinations a week, for three weeks, of the stools and urine or, failing this, six examinations with as long an interval as possible between, should be made by selective cultural methods to find out whether typhoid bacilli are being excreted. If they are, the patient should be regarded as a persistent carrier; if they are not, it might be advisable to repeat the Vi-agglutination

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test three months later to see whether the titre is falling. Further action would depend on circumstances.

"As every case of typhoid fever owes its origin to a carrier (shedder), it is an obvious advantage to a medical officer of health to know at least some of the potential sources of infection in his district. By ascertaining the type of infecting organism by the Vi-bacteriophage method, and by keeping a register of the names and addresses of the carriers thus typed, it may prove easier to trace the source of infection of fresh cases when they arise.

"The Emergency Public Health Laboratories have been requested to do all they can to assist medical officers of health in making the proposals effective."

It is estimated that in 5% of cases of typhoid fever a raised titre of Vi-agglutinins persists for six months or more and that 2% or more of patients become chronic carriers. Of the latter, 90% have a permanently elevated Vi-agglutinin titre. The measurement of Vi-antibody is therefore a valuable indication of the carrier state.

Typhoid and Paratyphoid

Up to August 19 123 cases of typhoid had been admitted to hospitals in Wales and 2 had died. Further cases in visitors believed to have been infected by means of ice-cream consumed at Aberystwyth have been admitted to hospitals in various parts of England but the total number is uncertain. This outbreak appears to be on the decline, as might be expected following the discovery of the vehicle of infection.

A number of persons, mainly children, living in Halifax and surrounding districts are suffering from an illness believed to be paratyphoid B and have been admitted to hospital. The nature of the illness and its origin are being investigated.

Infectious Disease in England and Wales

WEEK ENDED AUGUST 10

Notifications.—Smallpox, 0; scarlet fever, 707; whooping-cough, 1910; diphtheria, 243; paratyphoid, 13; typhoid, 89 (48 in Cardiganshire); measles (excluding rubella), 3299; pneumonia (primary or influenzal), 298; cerebrospinal fever, 34; poliomyelitis, 18; polioencephalitis, 1; encephalitis lethargica, 1; dysentery, 84; puerperal pyrexia, 149; ophthalmia neonatorum, 58. No case of cholera, plague, or typhus was notified during the week.

The number of service and civilian sick in the Infectious Hospitals of the London County Council on August 7 was 900. During the previous week the following cases were admitted: scarlet fever, 36; diphtheria, 28; measles, 61; whooping-cough, 31.

Deaths.—In 126 great towns there were no deaths from enteric fever or scarlet fever, 2 (0) from measles, 7 (0) from whooping-cough, 2 (0) from diphtheria, 34 (5) from diarrhœa and enteritis under two years, and 3 (0) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 261 (corresponding to a rate of 32 per thousand total births), including 28 in London.

A LIBRARY BAEDEKER.—The National Research Council of America has brought out under the editorship of Mr. R. R. Hawkins, chief of the science and technology division of the New York Public Library, a list of *Scientific, Medical, and Technical Books*, published in the United States from 1930 to 1944 which are still in print and available for domestic and foreign distribution. The task of deciding which books were to be included was undertaken by a committee of the council under the chairmanship of Mr. Harrison Craver and, after his retirement through illness, of Dr. John Fulton. The committee believed that a carefully selected group of books would be more useful than a longer but less informative list, and the complete title, publisher, price, and list of contents of each of the 6000 books included is given, accompanied by a short descriptive commentary on the book's purpose and scope. As a guide to the jungle of present-day technical publications the list will be of value both to the expert and to the casual inquirer, and is one more proof that Americans realise it is important that books should be read as well as written. Inquiries about the bibliography should be addressed to the United States International Book Association, 27, East 67th Street, New York City, 21.

Letters to the Editor

PROSPECTS IN POLIOMYELITIS

SIR,—We have read with dismay your leader of July 27 in which it is implied that the efforts to control poliomyelitis in Ireland are "applied on a large scale without more justification than that of the placebo." May we draw attention to points in your leader which are open to criticism and correction?

(1) The scheme of control did not (as stated in your leader) include chlorination of water-supplies, but recommended the boiling of milk and water in all areas where a piped supply was not available. In only one case was chlorination of a water-supply advocated—namely, in the case of a large boarding-school whose supply came from a private reservoir. For this school also the immersion before washing of all feeding utensils in *heavily chlorinated water* was advised. This is a procedure very different from the chlorination of water-supplies to rid them of bacterial pollution. It was a more sensible and practicable measure to advise than the boiling of all crockery, knives, and forks, which for many reasons would not have been possible.

(2) You state that the committee of experts who advised on poliomyelitis in boarding-schools was guarded in its advice on quarantine. This is not correct. In (*a*) the note to headmasters, (*b*) a suggested "form of letter" to parents, and (*c*) the revised section on poliomyelitis in the *Code of Rules for the Prevention of Communicable Diseases in Schools* (*Lancet*, 1946, i, 972) quarantine for three weeks is definitely recommended.

(3) You suggest that the difficulties rendered quarantine impracticable, and that there is "no solution to the problem of compensation for loss of earnings which at once arises when a quarantine of adult contacts is attempted in the ordinary household." In this country, under the Public Health (Infectious Diseases) Regulations 1941, local authorities compensate for any damage sustained by persons who are affected by public-health measures taken to control the spread of infection; for instance, compensation has been paid to farmers prohibited from sending milk to creameries. The economy of rural Ireland, where towns are small and scattered and the vast majority of the population lives on separate small holdings, permits of a high degree of quarantine. It was precisely to show the practicability of this procedure in Ireland that we wrote the paper which you published on July 6.

(4) You question the value of school closure. Since F. M. Burnet was mentioned in your leader, may we refer to the fact that in the Melbourne epidemic of 1937–38 he found (Dunham lectures, Harvard, 1944) that some fairly direct chain of contact between children could nearly always be traced. Geographical spread of the disease from suburb to suburb was very evident, and in nearly every instance the first child to be infected in a new suburb could be shown to have visited, or been visited by, a child from a suburb already affected. There was no evidence of carriage of infection by adults. Poliomyelitis in the Melbourne epidemic, he believed, was spread from child to child as a result of their own contacts—the source of the virus being sometimes salivary, from pharyngeal infection, and sometimes fæcal.

In rural Ireland the school is the principal point of child aggregation. Neglect of such an important means of transmission cannot be entertained.

(5) You say that "the relation between flies infected by excreta or sewage and the spread of the disease among human beings has not yet been established." This statement must be accepted with reserve, since it has not yet been proved that there is no relation, and particularly since (in point of time, &c.) we know little of the cycles or phases of virulence or extrahuman existence of the virus. Further the importance of the intestinal route of infection is increasingly recognised. The part played by flies in carrying the virus has been ably demonstrated by Sabin and Ward and other American workers. More recent work by Ward, Melnick, and Horstmann has shown that food infected with virus is capable of transmitting the virus to flies which were fed on it (*Science*, 1945, **101**, 491). To anyone with a knowledge of flies the further contamination of foodstuffs by them is no mystery.

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The control measures operated here are a logical outcome of the discovery of the intestinal route of infection. We know already that we are at present helpless in the face of abortive and unrecognised cases to control or prevent the spread of poliomyelitis infection to our satisfaction. We cannot agree, however, that we are so beaten that we cannot even attempt experimental efforts of control.

Your leader advances the view that at present the chances of preventing poliomyelitis are remote and that this tragic disease must be accepted as "a risk inseparable from social life in human communities," without however giving any evidence or results from well-organised efforts to control it. It says also that "it seems reasonable to forecast that the disease will in the end be robbed of its virulence if not of its powers of spread"—again without any concrete basis or authority for such an assertion.

Burnet in his Dunham lectures has stated the position so clearly that it is well to quote his exact words: "epidemiologically, the paralytic disease whose incidence is described in vital statistics is merely a means of recognising the existence of virus in the community and of estimating to some extent its range of distribution and its relative virulence." Again: "it is probable that the major factor responsible for the epidemic appearance of paralysis is the occurrence of biologically irrelevant mutation in the virus to an unduly invasive type."

It has been clearly shown that the virus has been isolated most frequently from the fæces of persons who were close family contacts with a known paralytic case; less frequently from those with more remote contact; and very seldom among those who had no contact with a case. Far from any attempt to provide a placebo, it seems to us sound common sense and our duty to attempt to protect the rest of the community when a focus of a virulent strain is indicated by the appearance of a paralytic case.

At the risk of over-simplification, we may regard it as reasonably certain that this disease exists in the community, either in human or other carriers, in a harmless state; that it can take on a virulent phase either through a biological mutation or some unknown influence; that the occurrence of a paralytic case indicates a focus of this virulent type; and that the existence of healthy carriers of this virulent strain seems likely to be limited to those in contact with paralytic cases. We believe that efforts to organise control measures on these bases should be made, and that epidemiological control, in the present state of knowledge, can only be achieved by experimental trial of such methods as we have advocated.

While it may be accepted that at present the chances of preventing poliomyelitis are remote, there is no justification for the defeatist attitude that we should do nothing to find ways or means to control its spread. Indeed, there is not yet sufficient knowledge on poliomyelitis to justify neglect of any approach, and there is sufficient basis and justification—in spite of this scanty knowledge—to endeavour, by trial-and-error experimentation, to control the spread of the disease.

JAMES DEENY.
JOHN D. MACCORMACK.
Department of Local Government and Public Health, Dublin.

THE WEST INDIES

SIR,—Your annotation of July 27 on nutrition in the West Indies again draws attention to the poor conditions which have long existed and for which the passage of time makes it increasingly difficult to provide a real remedy. Dr. Platt in his report rightly suggests action which could be taken now to mitigate in part the effect of faulty dietetics. Despite what in the way of palliatives may be done towards raising nutritional standards in the islands under British rule, these standards are bound up with the general economic circumstances obtaining in all except Trinidad, which island still has unexhausted natural resources, and in any case has, among other advantages, a key position on trade routes. These basic advantages should in time produce their own rewards, though anyone who knows Trinidad is aware of the prejudice and usages which, somehow, must first go.

Your annotation refers to some of the factors recognised as retarding better conditions in these lovely islands which are in grave danger of becoming tropical slums. Whether we like it or not, much of the prevailing distress results from the actions of our forefathers, who, among other questionable activities, started overpopulating the islands by the uncontrolled introduction of coloured labour. It is common knowledge that, with other measures, most praiseworthy endeavours are now being made to develop crops which do not have to compete in world markets, increasingly supplied from better geographical and (in the case of sugar) subsidised sources; yet the fundamental cause of much of the trouble persists. That is, there is an increasing population living on overworked soil. For this reason many of us feel that the only ultimate salvation for the West Indies is to encourage emigration to the British territories on the nearby mainland which have a sufficiency of fertile soil to enable those who are transferred to become self-supporting, and, for the more ambitious, sufficient space to develop agriculture on a large enough scale to enter world consumer markets with some prospect of competing successfully. Were a university ever to be founded in the British West Indies, its dominant theme should be agricultural, rather than legal or artistic; the nucleus for this already exists.

It is a professional responsibility to see that technical advances, whether in therapeutics or dietetics, are applied as rapidly as possible, respectively at the bedside and in the realms of public health. These advances can only be employed to the best advantage when the fundamental background receives proper attention.

London, W.8. W. R. THROWER.

FOLIC ACID

SIR,—May we correct a statement in your annotation of June 29? Neither propionic aldehyde nor *p*-aminobenzoyl chloride were starting materials in the synthesis of pteroylglutamic acid. The immediate starting materials were *p*-aminobenzoylglutamic acid, α, β-dibromopropionaldehyde and 2, 4, 5-triamino-6-hydroxy pyrimidine. The α, β-dibromopropionaldehyde was made by brominating acrolein. The *p*-aminobenzoylglutamic acid was made by reacting *p*-nitrobenzoyl chloride and glutamic acid to form *p*-nitrobenzoylglutamic acid; this compound was then reduced to the corresponding amine.

Also, folic acid under the trade name of 'Folvite' has been available on the market since several months before our article in *Science*.

ROBERT B. ANGIER
New York, U.S.A. Lederle Laboratories Inc.

*** Folvite has not yet reached this country except in small quantities distributed for experimental purposes. We understand from Messrs. Chas. Thackray, English agents for Messrs. Lederle, that they are expecting a supply.—ED. L.

CALCIFEROL AND SEDIMENTATION-RATE

SIR,—In view of the significance attached to serial estimations of the erythrocyte-sedimentation rate (E.S.R.) in chronic infections, I should like to draw attention to the following observations extracted from an investigation I am making.

The data, which will later be more fully reported, are obtained from the first 32 of a series of patients with lupus vulgaris who have been given calciferol daily, usually in doses of 100,000 units.

After 4–7 months: (1) 50% of the patients showed an increase in E.S.R., averaging +170%; (2) 15% showed a reduced rate, averaging −160%; and (3) the remaining 35% showed variations within normal limits or virtually no change.

Half the patients whose E.S.R. increased were clinically apparently cured or considerably improved. In each of these, however, the E.S.R. was normal at the commencement or after a few weeks of calciferol therapy; and in each the E.S.R. was increased beyond normal limits after 3–4 months.

Of the other half whose E.S.R. increased, 6 showed little or no clinical change, and the remaining 2 deteriorated. Of these 2, one, a female with long-standing lupus, apparently healed after a course of Finsen and general light, relapsed after 4½ months on a maintenance dose of calciferol (50,000 units daily); her general light had been discontinued for this 4½ months, and the relapse was in accordance with her usual history in the

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past when she had ceased having general light. The second case developed lupus carcinoma.

Of the patients whose E.S.R. decreased, all were clinically improved; and in those cases where the rate varied within normal limits or remained virtually unaltered, the clinical changes varied from none to apparent cure.

My impression, therefore, is that the E.S.R. is of little value in judging the progress of lupus vulgaris treated with calciferol. The effect of calciferol on the plasma fibrinogen is being investigated.

Skin Department, London Hospital, E.1. P. J. FEENY.

VARIATION IN THE FEMALE PELVIS

SIR,—Whilst congratulating Dr. Nicholson and Mr. Sandeman Allen on their paper of August 10, I feel that they have over-simplified both the ætiology and the variations themselves.

No study of the pelvis, especially when its object is to foretell the course of labour, can be complete unless the cavity, and more particularly the sacrum, are considered. There can be little doubt that the shape of the sacrum and its angular relation to the rest of the pelvis have a most profound effect on the mechanism of labour; in fact, of the plates taken at an X-ray pelvimetric examination, that giving the lateral view is of greater importance than the others. Nowhere in their paper do Nicholson and Allen mention the sacrum or the lateral view of the pelvis.

It is true to say that what will happen to the fœtal skull at the brim of the pelvis is largely governed by the condition in the cavity; the measurements at the brim may be adequate whilst those in the cavity are too small to receive the skull. The size and shape of these cavity-measurements depend more on the shape and position of the sacrum than on all the other factors combined.

In my opinion it is seldom possible to place any pelvis in one of the four simple groups given in this paper. The value of Caldwell and Molloy's classification lies to a great extent in its description of the parts of the pelvis other than the brim and outlet; the shape of the sacrum and the form and size of the sciatic notches are, for instance, included; and the mixed types of pelves, which form the majority, are easily and clearly described by terms such as gynæ-android.

So far as the sacrum is concerned, it has been my experience not only that there are very many different shapes and positions but that these characteristics do not follow any particular rule in relation to the type of pelvis. With the exception of a few types, such as the retroposed sacrum often found in the rickety flat pelvis, it would be very difficult to prove a nutritional cause for the many variations found in this bone.

Clinically, any pelvic examination which is concerned with the inlet and outlet only is largely a waste of time; at the brim the progress of the fœtal head can be followed during labour, and the possibilities at the outlet should have been determined clinically beforehand. It is important, however, to know what course the head will take in the pelvic cavity and what difficulties it will meet with there; this information cannot be deduced by any simple measurement of the brim or outlet, however accurate, and a prognosis based on either an opinion or on a mathematical calculation from knowledge of these two planes only can be of little value. A lateral view of the pelvis is absolutely necessary, and this must be assessed by somebody knowing the effect on the mechanism of labour of the shape and position of the sacrum.

Hope Hospital, Pendleton, Salford. GUY ROWORTH.

FIGURES, FACTS, AND FANCIES

SIR,—In your issue of August 10, Professor Heuer's painstaking and valuable monograph on the treatment of peptic ulcer is reviewed. The general tone of your review is one of pious resignation and gentle tolerance of yet "one more attempt to draw conclusions from a statistical analysis of 1139 cases." The phrases "in spite of the burden of figures" and "it is a pity that Dr. Heuer has restricted himself so rigidly to his figures" which appear in the review are typical of the frame of mind to which I refer.

I would suggest, Sir, that the tone of this review does poor service not only to the eminent journal in which it appears but to British medicine as a whole.

The day of the authoritative statement based on the occult science of clinical instinct is dying. Medical students and practitioners of the present require something more than an air of omniscience and a Harley Street address to convince them of the value of a particular line of treatment.

Those who affect to despise the critical evaluation of results by careful follow-up and assessment (a method of which Professor Heuer's monograph is a model) are careful never to be too explicit about the basis for their own views. I heard an Eminent Surgeon at an Eminent Society recently suggest that a more valuable way of forming an opinion was to investigate the incidence of private referred cases! (Dare I point out that this itself is statistics in miniature!)

May I venture to suggest, Sir, that one of the main reasons that figures are so unpopular in British medicine is that the assessment of results is time-consuming, exasperating, and unremunerative, whilst operating is rapid, pleasant, and profitable? Many a man has made a fortune with his scalpel, but the follow-up card too often brings nothing but disappointment and contumely.

It would be a good thing for British medicine if each hospital and nursing-home were compelled to publish an annual report, compiled by an impartial body, of the end-results of the treatment undertaken within its walls.

Edinburgh. D. M. DOUGLAS.

EMERGENCY BED SERVICE

SIR,—The many London doctors who made use of the Emergency Bed Service during the war must often have wondered just how long it would continue to work only by day. It was, of course, always intended that a 24-hour service should be provided, and prior to the war this was done. War-time difficulties, however, made this impossible to maintain, and for many years the service has closed at 10 P.M. Indeed, at one time it had to close at "blackout," as the windows and curtains had been blown away!

Now that it is possible to obtain the necessary staff and to run the office free from enemy interference, the committee have decided to resume the full 24-hour service, and from 9 A.M. on Sept. 1 it will be available to doctors day and night throughout the year.

The service continues to deal with all acute and urgent cases, excluding fevers, but, owing to the prevailing shortage of beds in London, it often takes considerably longer to find a bed than it did before the war, and it is quite impossible to deal with a case not in absolute need of immediate admission. Subject to these limitations, every possible assistance will be given to doctors.

Voluntary Hospitals Emergency Bed Service, 10, Old Jewry, London, E.C.2. (Monarch 8515.) R. E. PEERS Secretary.

"MASKED" SYPHILIS

SIR,—I was much interested in the paper by Dr. E. Cronin (July 20, p. 84). It recalls a point which often eludes clinicians—namely, the masking effect of the "provocative" injection of neoarsphenamine (N.A.B.)

Many years ago a patient was sent to me with a penile ulcer, which appeared three weeks after a visit to India. Before the visit his doctor sent me a specimen of blood, which I found negative to the Wassermann and Kahn reactions. The penile ulcer was about 1 in. in diameter, with shelving edges; there was slight enlargement of the inguinal glands on both sides, but no tenderness. There was no rash or sore throat. I kept the patient two days and performed about six dark-ground examinations of material from the ulcer and from puncture of tissues near the ulcer; all were negative. I repeated the blood-tests; they too were again negative. I sent him back to his doctor with the advice that he should have no antisyphilitic treatment and that the blood-tests should be repeated every week for six weeks. The doctor adopted my suggestion about the repeated blood-tests, but, on the advice of a surgeon, he gave the patient a "provocative" injection of N.A.B. 0·3 g. the day after the repeated dark-field examinations. Needless to say, I was not told of this injection. The six weekly tests were all negative. Three months after I first saw him the patient went home to England on leave and there developed a sore throat and

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rash; he consulted a specialist who found his Wassermann and Kahn blood-tests strongly positive and diagnosed syphilis, much to the discomfiture of the patient. This case was later quoted against me, as an example of malpraxis.

In an article on the prophylactic treatment of accidental inoculations with *Treponema pallidum* (*Trans. Ass. Amer. Phys.* 1938, **53**, 281) H. J. Morgan expresses his belief in immediate treatment with intravenous N.A.B. 0·6 g. followed by a course of three injections of N.A.B. 0·6 g. He cites L. Fournier and L. Guenot (*Pr. méd.* 1919, **27**, 354), who treated 40 women just after intercourse with a male with a penile chancre. Of these women, 5 refused treatment, and the other 35 received either arsphenamine 1·0–1·2 g., or N.A.B. 1·2–2·0 g. The 5 untreated all developed syphilis; none of the treated women developed syphilis.

It would appear that the "provocative" dose of N.A.B. has no place in the treatment (or diagnosis) of syphilis; the so-called Jarisch-Herxheimer reaction, if it occurred, must have passed unnoticed by the patient and his attendants in my case; and I think the N.A.B. 0·3 g. certainly helped to obscure the diagnosis. For those who can learn, the educational value of such a series as Dr. Cronin's is inestimable.

Palmer's Hill, Epping. FRANK MARSH.

THE COMMON COLD

SIR,—A new attack is to be made on the common cold by a research unit established by the Medical Research Council at the Harvard Hospital, Salisbury. May I call attention to a method of treatment which I have found effective in many cases over many years?

As soon as the first signs of a cold are apparent the patient should gargle, two-hourly, with a solution of 20–25 drops of liquor ammoniæ dilutus *B.P.* in half a tumbler of water. By this simple and harmless remedy the symptoms are as a rule relieved or removed within a few hours. The many other solutions, including antiseptics, which I have tried in the same way have not had the same success, and the effect of ammonia on the swollen mucous membrane of the nasopharynx may perhaps be related to its effect on acute urticaria or on the weals caused by stings or the injection of histamine.

London, W.1. B. O. C. PRIBRAM.

C.CM. OR MILLILITRE?

SIR,—Dr. J. M. Hamill, in his letter of August 17, attributes to me a statement or thought which I have not expressed. I am not concerned with the impropriety of converting c.cm. to millilitres by using the proper conversion factor. It is clearly not improper to do so, it is merely tedious. The only point at issue between us is that in my opinion, as the volume of the c.cm. is not a millilitre (on this we are agreed), it is inaccurate for a clinician to say when he has injected so many c.cm. of a substance that he has injected the same number of millilitres.

London, W.1. G. E. BEAUMONT.

RESEARCH ON TUBERCULOSIS

SIR,—Dr. Newell's suggestion that an Institute for Tuberculosis Research should be founded in this country will find considerable support, for many are making gallant lone efforts to explore some part of the vast field of tuberculosis but there is at present no body which is coördinating these excellent efforts.

Research requires not only enthusiastic workers but also direction and adequate financial support. It would probably not be difficult to gather together a number of experts who would be capable of directing research, but to find the financial backing such a body needs is not going to be easy. But why start another tuberculosis organisation when there are already three which include amongst their members almost every enthusiastic tuberculosis physician in this country?

As long ago as May 30, 1942, a leader in THE LANCET entitled Three Over-Lords said that the action of the three organisations (the National Association for the Prevention of Tuberculosis, the Joint Tuberculosis Council, and the Tuberculosis Association) had been "likened, trenchantly but not unkindly, to the fibrillating auricle—individual ineffective twitchings keeping a sluggish stream on the move"! Would not the formation of a new body add to these "ineffective twitchings"? This applies particularly to research, and the deduction "How much better would be the powerful systole of combined action" is specially significant in this particular field of tuberculosis work. The combined action of these three associations could do much to control and correlate Tuberculosis Research, but the provision of the necessary funds still remains a problem which I suggest should, in the first instance, be a matter for discussion with the Government; and the Three Over-Lords are the channels through which such discussions should be inaugurated.

Dr. Newell will do good service if he is able to collect the names of those interested in his plea for an Institute for Tuberculosis Research and if he would present their demands to one, or all, of the associations I have mentioned. If these bodies could take united action it is possible that his efforts will not have been in vain.

Berkhamsted. FREDERICK HEAF.

OUR HOUSES

SIR,—I was particularly interested in your leading article of July 27 on The Cult of the Obsolete. I would like to add one specific item—namely, that every house, no matter how small, should have two W.C.'s—one inside and one outside, for preference. Most of the even small houses built in the mid-Victorian era have a W.C. inside and one outside, but the majority of the houses built during the years 1914–39 (the "ribbon development" period) have only one.

An extra W.C. is a very great asset, and I submit that in many houses it would help to form regular habits during the early morning rush hours.

Plumstead, London, S.E.18. C. J. SAWARD.

Obituary

BERTRAM SYDNEY NISSÉ

M.D. LOND., M.R.C.P.

Dr. Bertram Nissé, physician to the Red Cross Clinic for Rheumatic Diseases, died in London on August 14. Educated at St. Olave's School, London, he entered the London Hospital with a Buxton arts scholarship and qualified in 1921. A year later he took his M.B., and in 1924 he was awarded the university gold medal for his M.D. thesis. He obtained the M.R.C.P. in 1925, and after holding house-appointments and a pathological assistantship at the London Hospital he became resident medical officer at the National Hospital for Diseases of the Heart, for cardiology and the chronic rheumatic diseases were already his main interests. Later he was promoted to chief assistant at the National Heart Hospital. Convinced of the practical importance of developing teaching and research in the rheumatic disorders and of improving standards of practice, he was one of the original team of physicians who in 1930 founded the B.R.C.S. clinic. During the war years, in the absence of Dr. W. S. C. Copeman on service, he was also in charge of the rheumatism clinic at the West London Hospital. A member of the International Society for Medical Hydrology, he was also a vice-president of the physical medicine section of the Royal Society of Medicine. In his monograph, published in 1938, he compressed into small compass the salient features of the chronic rheumatic diseases together with their physical treatments.

K. S. writes: "A fine physician, in both character and learning, Nissé gave to every patient the benefit of his wide knowledge of general medicine. For each he spared himself no effort to work out a comprehensive scheme of treatment, never falling into the common error of assigning an unduly dominant place to one branch of therapeutics. He was equally unstinting of his natural kindliness and sympathy, and was the same unruffled, dependable friend to all who sought his help even in his last year of ill health and anxiety. His untimely death comes at a moment when there is an awakening throughout the land to the need for a national campaign against rheumatism; his example and his work can ill be spared."

Dr. Nissé married in 1932 Miss Hélèna Jacobs, of Newcastle, and he leaves her with a son and a daughter.

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ELEANOR CECILY THISTLETHWAITE

M.B. ST. AND.

Dr. Thistlethwaite, who died on June 6, was born in the Philippines in 1896, and graduated M.B. at St. Andrews University in 1920. After holding resident posts at the Queen's Hospital for Children, Hackney, she spent five years in general practice in Gray's Inn Road and Camden Town. She held posts at the London Lock Hospital and the Islington medical mission till in 1935 she became visiting medical officer to St. Margaret's Hospital, Kentish Town, where she was responsible for the care of children suffering from vulvo-vaginitis and ophthalmia neonatorum. During the war, as medical officer to a mobile naval train, she gave valuable service at the evacuation of the wounded after Dunkirk. Later, during the first London blitz, as assistant medical officer of health for St. Pancras with special responsibilities for air-raid precautions, she often remained at the first-aid stations night and day. Her chief, the late Dr. Maitland Radford, formed a very high opinion of her conduct and services through this testing time.

At the beginning of 1943 Dr. Thistlethwaite was appointed assistant medical officer for Southend-on-Sea. In the school medical service and at the V.D. treatment centre she gained the confidence of patients, parents, and children, and her kindly interest and wide experience of life quickly enabled her to make a unique position for herself.

VERNON THORNE THORNE

M.B. CAMB., D.T.M. & H.

Vernon Thorne Thorne was born in 1904, the son of Dr. Richard Thorne Thorne and grandson of Sir Richard Thorne Thorne, F.R.S. Educated at Marlborough and Caius College, Cambridge, he followed his father and grandfather to Bart's in 1926. After qualifying in 1930 he spent three years in general practice with his father in Woking before joining the Colonial Medical Service. When war broke out in 1939, he failed to obtain his release to join the R.A.M.C. and continued with his duties in Nigeria and the British Cameroons, working exceedingly hard for long extended tours. Last year he became seriously ill and was invalided home suffering from a tropical form of chronic endocarditis. After three months in hospital he returned to Woking, where he died on August 5.

He was married at St. Bartholomew's the Great in 1938, and leaves a wife and daughter.

Births, Marriages, and Deaths

BIRTHS

BLOOM.—On August 6, in London, the wife of Dr. Harold Bloom—a daughter.

HAWKINS.—On August 10, at Oxford, the wife of Dr. G. F. C. Hawkins—a daughter.

LEESON.—On August 1, at Leicester, Dr. D. Jean Leeson (*née* Mackay), the wife of Dr. Clifford A. Leeson—a son.

NEWMAN.—On August 11, the wife of Mr. Philip Newman, F.R.C.S.—a son.

PAUL.—On August 10, at Liverpool, the wife of Major Richard Paul, R.A.M.C.—a son.

SANDERSON.—On August 7, the wife of Dr. A. W. Sanderson, of Stocksfield, Northumberland—a son.

MARRIAGES

CALDERWOOD—SWAIN.—On August 14, at Blackpool, Robert Calderwood, M.B., Malayan Medical Service, to Marjorie Swain, M.B., of West Timperley, Cheshire.

HOWARTH—HOPKINS.—On July 16, at Llanilid, Frank Hugo Howarth, M.B., major R.A.M.C., to Lucy Gwendoline Irene Hopkins.

MADDOX—SIMMONS.—On August 14, at Alderley Edge, Frederick Christopher Maddox, M.B., to Catherine Simmons, M.B.

DEATHS

BURKE.—On July 22, at Manila, Philippine Islands, William Joseph Butler Burke, B.A., M.D. Dubl., aged 72.

DAVIDSON.—On August 15, in Edinburgh, Arthur Davidson, M.B. Aberd., surgeon captain R.N., retired.

FORBES.—On August 13, at Weymouth, Colin Macphail Forbes, M.B. Glasg.

MARSHALL.—On August 10, in London, Robert James Marshall, M.D. Glasg., formerly of Shanghai.

MAY.—On August 15, Otto May, M.D. Camb., F.R.C.P., aged 67.

NISSE.—On August 14, in London, Bertram Sydney Nissé, M.D. Lond., M.R.C.P.

SAVERY.—In August, at Dun Laoghaire, co. Dublin, Frank Savery, M.R.C.S., formerly of Ealing.

TAYLOR.—On August 15, at Tunbridge Wells, Frederick Howard Taylor, M.D. Lond., M.R.C.P., F.R.C.S., aged 83.

Notes and News

UNITED STATES' DIETARY

FOR some years the American housewife has been becoming increasingly nutrition-conscious, partly through newspapers and the radio, but mainly perhaps through the warm lunches provided for school-children and factory workers. The change is reflected in the altered food habits since 1909, when accurate records were first kept. The consumption of grain products has declined by a third, and there has been some reduction in the demand for meat; against this, greater variety and increased consumption of vitamins have been attained by wider distribution of milk, fruits, and vegetables. According to a review published by the Bureau of Human Nutrition and Home Economics, the total calories and protein consumed during the war period were less than at any time since 1909; but this was offset by a further increase in the distribution of almost all the protective foods.

University of London

The title of professor of clinical pathology in the university has been conferred on Dr. R. J. V. Pulvertaft, in respect of the post held by him at Westminster Hospital medical school.

The title of professor of embryology in the university has been conferred on Mr. G. R. de Beer, D.SC., F.R.S., in respect of his post at University College, as from Oct. 1, 1945.

Mr. Ian Aird has been appointed to the university chair of surgery tenable at the British Postgraduate Medical School, as from Oct. 1.

Mr. Aird qualified M.B. at Edinburgh in 1928, and was awarded the Annandale gold medal and the Wightman prize in clinical medicine. After resident appointments, including periods as house-surgeon at the Royal Infirmary and the Royal Hospital for Sick Children, Edinburgh, he attended postgraduate courses in Paris and Vienna. In 1930 he became F.R.C.S.E. From 1931 to 1935 he was senior clinical assistant and clinical tutor in the wards of Mr. J. M. Graham at the Royal Infirmary, Edinburgh. In 1934, with a Rockefeller travelling fellowship, he went for a year to the United States, where he trained under Prof. Evarts A. Graham, at St. Louis, Missouri; and he held appointments as research fellow in surgery in the University of Washington, and extra assistant in the department of surgery at Barnes Hospital. On returning to this country in 1935 he graduated CH.M., and was appointed to the staff of the Royal Edinburgh Hospital for Sick Children; in 1939 he was promoted to full charge. In the same year he became temporary assistant surgeon, and in 1943 assistant surgeon, to the professorial surgical unit in the Edinburgh municipal hospitals. From 1939 to 1943 he served with the R.A.M.C., holding the rank of lieut-colonel. Since then he has been surgeon to the E.M.S. Hospital at Gogarburn. He is lecturer on diseases in children, and assistant director of the Wilkie surgical research laboratories, at Edinburgh University.

Dr. B. S. Platt has been appointed to the chair of human nutrition tenable at the London School of Hygiene and Tropical Medicine, as from a date on which he can take up his appointment.

Dr. Platt graduated B.SC., with first-class honours in chemistry, at Leeds in 1923, and M.SC. the following year. In 1926 he became PH.D., and in 1930 qualified M.B. After a period as house-physician at Leeds General Infirmary he was appointed associate in medicine in the division of clinical research of the Henry Lester Institute of Medical Research, Shanghai. In 1938 he joined the scientific staff of the Medical Research Council, and since 1944 has been director of the human nutrition research unit. A report of his nutritional survey of the West Indies was published earlier this year.

As announced last week, Dr. Ronald Hare has been appointed to the chair of bacteriology tenable at St. Thomas's Hospital medical school, from Oct. 1.

Dr. Hare won the senior entrance scholarship at St. Mary's Hospital in 1919, and qualified M.B. Lond. in 1924. In 1926 he was awarded the Cheadle gold medal and gained a research scholarship at the Institute of pathology and research, St. Mary's Hospital. He won the Katherine Bishop Harman prize in 1928, and the Nicholls prize in 1934. In 1935 he graduated M.D. After five years on the staff of the inoculation department at St. Mary's Hospital, he took part in the planning and organisation of the research laboratories at Queen Charlotte's Hospital, and was first assistant there until 1936. During this period he carried out extensive researches on the streptococci and the part they play in puerperal infection. In 1936 he went to Canada, where he has since remained, holding appointments as research associate in the Connaught laboratories and as lecturer in the department of hygiene and preventive medicine in the University of Toronto. In addition to undertaking research on the virus of influenza and the large-scale manufacture of influenza vaccine, he was for a time in charge of the planning and organisation of the penicillin plant set up at the University of Toronto by the Canadian Government in 1943. His published work includes contributions on the classification of the hæmolytic streptococci, the mechanism of wound infection, the spread of nasopharyngeal infection, and the epidemiology of influenza.

Dr. J. M. Robson has been appointed to the readership in pharmacology, tenable at Guy's Hospital medical school, as from Oct. 1.

A VERSATILE CARCINOGEN.—In the second paragraph of our annotation of August 17 (p. 242) the word "Leeds" should be substituted for "Sheffield."

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University of Cambridge

At a congregation on August 3 the following degrees were conferred:

M.D.—K. G. Bergin, G. E. Burton, P. T. Cooper, E. M. Darmady, John Murray, A. M. Payne, A. C. Thackray, R. M. Todd.

M.B., B.Chir.—A. V. G. Bibby, B. H. Brock, J. A. Bulleid, I. F. J. Churchill-Davidson, L. W. Clarke, D. E. Cullington, P. L. M. Hartley, P. M. R. Hemphill, S. L. Hetherington, J. D. Lever, R. H. G. Lyne-Pirkis, R. W. J. Maclure, I. M. Ormerod, Roy Randell, C. E. D. Taylor, H. B. Whitmore (in person); D. M. C. Ainscow, G. S. Andrew, D. K. Briggs, E. H. W. Burt, H. C. Churchill-Davidson, J. W. Coleman, D. J. Crockett, P. S. Davis, J. R. B. Dixey, W. M. Edgar, A. C. Franks, J. B. Frost, T. C. Gibson, E. C. Glover, Leonhard Haas, A. W. I. Hall, P. S. Hall, W. J. Hay, Michael Hemming, E. M. James, K. E. Jefferson, A. G. Jessiman, G. L. Leathart, A. H. Littlewood, Cecil McIver, W. D. Mail, K. E. Marsh, E. P. G. Michell, D. T. Milnes, D. V. Milward, D. R. Morgan, Philip Rhodes, J. S. Rivers, O. C. A. Scott, J. G. Selwyn, Malcolm Shirley, D. R. Smith, J. S. Swallow, R. J. D. Temple, M. K. Towers, H. W. Trusted, Sam Vakil, John Vallance-Owen, Walter van't Hoff, D. R. Wallace-Jones, D. B. Wallis, W. R. Wardill, I. W. Whimster, Humphrey Whitmore, R. J. Williams (by proxy).

Titles of degrees were conferred on the following:

M.B., B.Chir.—C. M. E. Jones, G. A. Meigh, Mrs. M. H. Miller, Mrs. A. M. P. Pantin.

The E. G. Fearnsides scholarship has been awarded to Dr. Lionel Wolman.

University of Leeds

As announced recently, Dr. H. V. Dicks has been appointed to the new chair of psychiatry.

Dr. Dicks studied medicine at Cambridge University; he was a foundation scholar of St. John's College, where he took the natural sciences tripos. Later, he went to St. Bartholomew's Hospital, winning the Baly research scholarship, the Brackenbury scholarship in medicine, and the Kirkes gold medal. He qualified M.R.C.S. in 1926, and M.B. in 1927, when he also became a M.R.C.P., and graduated M.D. After holding appointments as house-physician at Bethlem Royal Hospital, and as house-physician, demonstrator in pathology, and chief assistant to a medical unit at St. Bartholomew's Hospital, he joined the staff of the Tavistock Clinic in 1928, becoming assistant medical director in 1930. The results of his work were published in 1939 under the title *Clinical Studies in Psychopathology* and in many contributions to the literature. In 1940 he left the E.M.S. to joint the Army, in which he served with the rank of lieut.-colonel. His work included studies of the psychological structure of German and National Socialist groups and communities in relation to military and political planning, and in 1945 he became consultant in psychiatry to the German personnel research section of the Control Commission. Since leaving the Army he has returned to the Tavistock Clinic, and has also joined the staff of the new Tavistock Institute of Human Relations.

University of Edinburgh

Dr. Richard Ellis has been appointed to the Edward Clark chair of child life and health, in succession to Prof. Charles McNeil, who is retiring on Sept. 30.

Dr. Ellis was educated at Leighton Park and at King's College, Cambridge. He qualified from St. Thomas's Hospital in 1926, and after holding house-appointments at St. Thomas's went to the United States, where he worked as a research fellow in pædiatrics at Harvard medical school in 1928 and 1929, and was intern at the Children's Hospital, Boston, Mass. After returning to this country he was registrar and first assistant to the children's department of the London Hospital. In 1930–31 he held a Wander research scholarship at Westminster Hospital, and thereafter went back to St. Thomas's as registrar in the children's department. In 1931 he graduated M.D. and became M.R.C.P. He was pathologist and inpatient's medical registrar to the Hospital for Sick Children, Great Ormond Street, before his appointment to the honorary staffs of the Infants' Hospital and of Guy's Hospital, where he is physician in charge of the children's department. With Dr. Audrey Russell (now Mrs. Ellis) he supervised the medical side of the evacuation of Basque children from Bilbao in 1937 during the civil war in Spain, and later he worked for Polish child refugees in Rumania and Hungary. Elected F.R.C.P. in 1939, he joined the Royal Air Force in 1940, and served, with the rank of wing-commander, in North Africa, Italy, and Belgium, being mentioned in despatches and appointed O.B.E. Dr. Ellis is editor of the *Archives of Disease in Childhood*, and has himself written extensively, particularly on nutritional and metabolic disorders and problems of development in infancy. He has lately joined central executive of the National Society for Prevention of Cruelty to Children.

Return to Practice

The Central Medical War Committee announces that the following have resumed civilian practice:

Mr. H. JACKSON BURROWS, F.R.C.S., 16, Park Square East, Regent's Park, N.W.1.

Mr. JOHN HOWKINS, F.R.C.S., 109, Harley Street, W.1. (Welbeck 7395—day; Wimbledon 1613—night.)

Dr. H. F. TURNEY, 53, Queen Anne Street, Cavendish Square, W.1.

Surgical Instruments Panel

A panel has been appointed by the Interdepartmental Committee on Scientific Instruments, with the objects of promoting the manufacture of surgical and dental instruments and of placing these industries on a sound economic basis. Questionaries have been sent to a number of manufacturers; any others who would like to assist with information should communicate with the secretary, Surgical and Dental Instrument Panel, room 507, Portland House, Tothill Street, London, S.W.1.

A Course at Cambridge

A fortnight's general refresher course will be held at Addenbrooke's Hospital, beginning on Oct. 14. This course is open to medical officers released from the Forces, and to National Health Insurance practitioners who will receive the same allowances as are paid to doctors released from the Services. Application should be made to Dr. A. C. D. Firth, Trinity Hall, Cambridge. (Tel. 5047.)

Airborne Medical Society

A permanent Airborne Medical Society is being formed, whose membership will be open to all medical and dental officers who have been entitled to wear the maroon beret. Further information may be had from the hon. secretary, Mr. Guy Rigby-Jones, M.C., F.R.C.S.E., 63A, Belsize Park Gardens, London, N.W.3.

Franco-Anglo-American Medical Society

The third quarterly meeting of this society will be held at 11, Chandos Street, London, W.1, on Tuesday, Sept. 10, at 2.30 P.M., when Lord Horder will take the chair.

Ministry of Health

Mr. H. Symon has been appointed under-secretary (housing) in the ministry, and Miss Enid Russell-Smith an additional under-secretary in the health services division.

Dr. J. D. ROBERTSON, of the Courtauld institute of the Middlesex Hospital, is shortly leaving for the United States where he will lecture for the University of California at San Francisco and Los Angeles and will deliver a Mayo Foundation lecture at Rochester, Minn.

Medical Diary

AUGUST 25 TO 31

Thursday, 29th

EDINBURGH POSTGRADUATE LECTURES

4.30 P.M. (Royal Infirmary.) Dr. J. D. S. Cameron: Treatment of Amœbiasis.

Appointments

CLARKE, H. OSMOND, M.B. Dubl., F.R.C.S.: surgeon to the London Hospital, and asst. director of the orthopædic and accident dept.

DAVIDSON, J. ROMANES, M.D. Edin.: medical superintendent, Orphan Homes of Scotland and Colony for Epileptics, Bridge of Weir, Renfrewshire.

HANNESSON, HANNES, M.R.C.S.: medical superintendent, Croydon County Borough Sanatorium, North Cheam, Surrey.

KERSHAW, J. D., M.D. Lond., D.P.H.: M.O.H. and school M.O., Colchester, Essex.

Hospital for Sick Children, Great Ormond Street, London:

ASERMAN, DAVID, M.D. Camb., D.A.: anæsthetist.

BLAIR, L. G., M.R.C.S., D.M.R.E.: director, dept. of radiology.

CREAK, E. MILDRED, M.D. Lond., M.R.C.P., D.P.M.: physician, dept. of psychological medicine.

EVANS, PHILIP, M.D. Manc., F.R.C.P.: physician to outpatients.

HENRY, T. C., M.R.C.S., L.D.S.: dental surgeon.

KIERNANDER, F. B., M.B. Lond., M.R.C.P., D.M.R.E., D.PHYS.MED.: director, dept. of physical medicine.

LUCAS, B. G. B., M.R.C.S., D.A.: anæsthetist.

Colonial Service:

AUSTIN, T. A., L.R.C.P.I., D.T.M. & H., D.P.H.: D.M.S., Uganda.

BASSETT, Captain T. H., M.B. Lond.: M.O., Tanganyika.

BOSSMAN, J. E., L.R.C.P.: M.O., Gold Coast.

BRODIE, ALISON G., M.B. Aberd.: M.O., Malaya.

CAUCHI, F. J., M.D. Malta: M.O., Nigeria.

CLARK, Major J., M.B., D.P.H.: M.O., Nigeria.

DAVIES, Captain A. G. M., M.B. Brist.: M.O., Tanganyika.

DAVIES, H. N., M.B. Edin., D.T.M.: medical specialist, Tanganyika.

DRYDEN, S., M.B.: asst. M.O., Jamaica.

DUNNETT, Major A. H., M.B. Aberd.: M.O., Gold Coast.

DYKES, W. S., M.B. Glasg.: M.O., Malaya.

ELBERT, J. J., M.B.E., M.B. Glasg.: M.O., Nigeria.

FITTON, J. M., M.B. Leeds, F.R.C.S.: orthopædic surgeon, Mauritius.

FRAZER, Major S. M., M.R.C.S.: M.O., Bermuda.

GORDON, S. G., L.R.C.P.: M.O., Gambia.

HOUSTON, Captain G. F., M.R.C.S.: M.O., Nigeria.

JACKSON, Major G. C. A., M.B. Lond.: M.O., Northern Rhodesia.

MCGARITY, J. F., M.B.: M.O., Malaya.

THOMPSON, Captain D. E., M.B. Camb.: M.O., Tanganyika.

TIMMIS, W. G., M.B. Lpool: M.O., Uganda.

UPTON, Flight-Lieutenant B. H. B., M.B. Birm.: M.O., Fiji.

VAN SOMEREN, Lieut.-Colonel R. K. A., F.R.C.S.E.: M.O., Kenya.

WILLETT, K. C., M.R.C.S.: trypanosomiasis officer, Tanganyika.

WRIGHT, Captain R.: M.O., Nyasaland.

Examining Factory Surgeons:

JOBSON, C. F., M.R.C.S.: Trowbridge, Wilts.

LLOYD, D. H., M.R.C.S.: Carmarthen.

MAIN, B. CAMPDEN, M.R.C.S.: Earl's Colne, Essex.

ROSS, M. S., M.B. Edin., F.R.C.S.E.: Hemsworth, Yorks.

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MYTH AND MUMPSIMUS *

JOHN R. FORBES
M.D. Lond., M.R.C.P.
MEDICAL REGISTRAR, GUY'S HOSPITAL

ONE of the few advantages of world unrest is that it disturbs complacency and raises doubt. The last twenty years, filled as they have been with the strife of men and the clash of opposing ideologies, have seen in all fields of human activity greater changes in beliefs and greater questionings of dogmas than perhaps any other period of history. Such tendency to iconoclasm is clearly manifested in medicine. Where is the elaborate prescription of yesteryear, where the once universal ritual of purgation, where the quondam rigid line of distinction between "organic" and "functional" disease? For very many years they survived destruction, but doubt has been too much for them, and now they join phlebotomy and exorcism in limbo. A like tendency is clear in surgery. The position of Fowler, for so long unassailed, is today seriously endangered (Spalding 1946). The emptiness of many traditional doctrines is being exposed, and Truth peeps out from the well of superstition and ignorance.

ELIMINATION OF TOXINS

Yet the myth and the mumpsimus in medicine die hard, as reference to almost any recent textbook or a visit to the wards of a modern hospital will show. For example, the traditional forcing of fluids upon patients (with or without pyrexia) in the hope of thereby "aiding in the elimination of toxins" is still a popular custom. It is important to be clear in this matter. The replacement of fluid lost from the body by a sweating, pyrexial patient is, of course, essential. It is equally necessary to maintain a free flow of urine when a drug such as a sulphonamide, capable, in too great concentration, of damaging the kidneys, is being given. But the conception of the body as some sort of involved water-closet, to be cleansed by flushing with copious draughts of Imperial drink, is quite out of date.† We have given up belabouring the colon with purgatives and douches, and the sweat glands with diaphoretics and hot baths, in this quixotic battle against elusive toxins. It is time that the kidneys were rescued from similar assaults, and the patient allowed to sleep undisturbed by frequent recourse to the urine-bottle.

Here it is interesting to note that although ritual purgation has largely disappeared from the modern practice of medicine, it unaccountably lingers in the treatment of acute food-poisoning. The initial dose of salts, or, *horribile dictu*, of castor oil, is still very commonly dispensed, though how the agitated intestine, already acutely inflamed and pouring forth fluid in an all-out effort to get rid of the offending bacteria, can be expected to welcome further chemical irritation is hard to see. A similar mystical belief in the virtues of magnesium sulphate in promoting "a free flow of bile" is responsible for its routine exhibition in such conditions as infective hepatitis. Epsom salts cause the gall-bladder to contract and to expel bile into the duodenum; but this is not likely to benefit inflamed liver-cells. The custom is based on ancient misconceptions of the pathogenesis of such disorders; yet it still persists.

In the matter of diet, superstition still plays an active part. The 1946 edition of a famous and justly popular British textbook of medicine admonishes its readers to forbid their hypertensive patients, among other things, "twice-cooked meat, salted and preserved meat, liver, kidneys, brains, sweetbreads, meat soup and gravies; seasonings of various kinds, and meat extractives." In fact, "all those articles of food which especially stimulate the cardiovascular system should be reduced, and proportionately to the degree of hypertension." On the other hand, "fish, poultry, game (not high), rabbit . . ." are permissible. Now, is there the slightest reliable evidence that the kind of food he eats makes the least difference to the patient with essential hypertension, so long as the total quantity is not excessive? What grounds are there for believing that certain articles of diet "especially stimulate the cardiovascular system"? Is not, in fact, all the foregoing a great deal of nonsense? Even supposing we can, by eliminating all protein foods, reduce our patient's blood-pressure a few millimetres, it is very doubtful if he will be any the better for it. It is the whole man that we must view, and not merely the minor variations of a column of mercury.

EXAMINING THE DIET

One might go further and ask whether we have reason to think that diet is of any real importance in those diseases which are not associated with gastro-intestinal dysfunction or with a definite upset of metabolism. Do our frequently elaborate dietary instructions serve, in most cases, any other purpose than to provide our patients with food for mutual gossip and discussion and, in wartime, with insoluble problems in catering? I do not believe that the enforced disappearance, due to rationing and food shortage, of finicking dietary régimes in the last few years has led to any appreciable increase in death or disease. In fact, I strongly suspect that many patients are the better for it. I have not observed, for example, that my peptic-ulcer patients relapse any more frequently since I perforce ceased to recommend a carefully selected diet for six months or longer, and now merely advise them to eat, within reason, whatever food they find does not disagree. On the contrary, they seem to be better; because no longer do they feel obliged to consider their stomach before all else, and to debate at every turn the "digestibility" of each dish before them. They cease to fuss and fad, to undernourish themselves by exaggerated dietary precautions, and to harass themselves with longings for unnecessarily forbidden fruit. They are no longer dialling TUM every few minutes, and their ulcers are duly carefree.

We are sometimes in danger of forgetting that the appetite, when not perverted by gluttony or hysterical asceticism, or falsely determined by injudicious medical advice, is a remarkably reliable guide to what is and what is not good for a sick person. If a uræmic patient should desire roast beef (an admittedly unlikely event), roast beef will do him no harm. If the case of infective hepatitis would like eggs and bacon, he should not be forbidden them. In most illnesses, especially if the patient be in hospital, anorexia, partly due to the illness perhaps, but more often the result of monotonous and unimaginative cookery, is a far more formidable obstacle to recovery than is the hypothetically injurious effect of protein and fat. That there are occasions when certain kinds of food must be withheld nobody will deny. The acute nephritic with severe oliguria will not respond well to a nitrogenous diet. But then he is in the highest degree unlikely to desire it. To withhold, however, protein foods from the patient with congestive heart-failure, on the very dubious grounds that such foods "increase metabolism and throw extra work on the heart," is entirely unjustifiable. One could adduce many other examples of such needless dietary restrictions. It is surely simple common sense that a patient who is eating the food he likes and enjoying it will be happier and will tend to recover more quickly than one who is condemned to a rigid, monotonous diet—a diet often based on arm-chair theory, or on dubious feeding experiments with rats, or simply on superstition, and bearing little or no relation to clinical reality. It is so easy to forbid; and the mere act of doing so gives an illusion of positive action which

* *Mumpsimus:* A traditional custom, obstinately adhered to however unreasonable it may be (O.E.D.).
† Compare the beliefs of Dr. Sangrado in *Gil Blas* (c. 1700).

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is soothing to the harassed physician, in despair of an excuse for interference in a disease which has no proved remedy. It is true that in many cases mild prohibitions in the matter of diet do no harm, and satisfy the patient's demand for action on the part of his medical adviser. But let us not thereby be led into believing that our diets have necessarily done any good, and arrogate to ourselves credit which properly belongs to the *vis medicatrix naturæ*. It is permissible sometimes to practise harmless deception on our patients for their own good: it is never permissible to deceive ourselves.

These remarks apply with almost equal force to the use of tobacco and alcohol. Do we, when we lightly forbid these amiable vices in our older patients, give enough thought to how we are depriving them of much-needed solace in their declining years, and adding to the winter of their discontent? When "use" becomes "abuse" it is a different question, and most of the controversy rages round the dividing line between the two. The moral aspect still further confuses the issue. But to forbid smoking and drinking to our patients without substantial reason if not cruel is useless, because in nine cases out of ten we shall not be obeyed.

The forced overfeeding of patients with normal appetites, such as was formerly practised on consumptives, is as foolish as underfeeding. The custom is waning, but its place threatens to be filled by the habit of indiscriminate exhibition of vitamins. There can be few patients with "neuritis" who have not received large but futile doses of aneurine, and not many with chronic skin diseases who have not swallowed ascorbic acid ad nauseam, all to little or no purpose. The mythical healing properties attributed to vitamins by now far exceed their very real ones.

TRADITION IN NURSING

In the field of nursing care the traditional custom is very strong. That this is in part due to the essential conservativeness of women is likely, but most of the blame must rest upon ourselves, because, as Cohen (1946) has pointed out, we fail to keep our nursing staffs informed of recent advances in therapeutics. It would be tedious to detail all the innumerable small traditional superstitions that are sedulously observed in every hospital and nursing-home. It is hardly credible that, until the blitz swept it away, it was the invariable custom in one of the major London teaching hospitals to close the operating-theatre after a death on the table (from whatever cause), in order to carry out a semi-religious rite of complete cleansing and fumigation. By this means, presumably, evil spirits were driven out and the soul of the departed exorcised. In most medical wards the patient with acute rheumatism or acute nephritis is invariably deprived of sheets and nursed between blankets, whatever the state of his sweat glands. One has only to remove the sheets from one's own bed on a warm night to appreciate the tickling discomfort that this procedure entails. The acute rheumatic or diphtheria patient is further harassed by being compelled to lie flat on his back in bed with one pillow, or even with none at all—a posture sometimes psychologically desirable for and fairly well tolerated by children, but one of considerable discomfort for adults. Decubitus in disease should be determined primarily by the patient's comfort and not by vague theorising on the part of his physician. Again, if our patient requires an enema, it will still be compounded of soap, turpentine, treacle, ox-bile, or some such rectal irritant, though the complete efficacy of normal saline was proved long ago.

It is our shame that we are often so ignorant of nursing methods that we are unaware of the existence of these and other outmoded manœuvres; or, worse still, we dismiss them, with a shrug and a tolerant smile, as harmless fads. Admittedly they are not lethal practices. But they cause needless discomfort to patients or create purposeless work for nurses, and should be tactfully but firmly discouraged, even in the teeth of hostile ward-sisters.

The undesirability of overlong immobilisation of older patients has, in recent years, become more widely appreciated. The dangers of venous thrombosis and of passive pulmonary congestion, and the difficulties of re-mobilising stiffened joints and muscles, today lead physicians to get their patients with, say, coronary thrombosis up and about earlier than they used to. In younger people, however, the risks of prolonged decubitus are perhaps not so fully realised, because they are psychological rather than physical. Sometimes such undue prolongation arises from the mistaken belief that a "normal" temperature, of not more than 99° F, is an essential preliminary to the patient's getting up. As the *British Medical Journal* recently (1946) pointed out, temperatures of 100° F or even more are occasionally compatible with perfect health, particularly if the patient be of tense, nervous temperament. Granted that such "pyrexia," especially during convalescence from an illness, should call for careful exclusion of lingering organic disease; but if a reasonable search has been made and has proved negative, and if the patient has no complaints, it is surely wiser to let him get up (when the "pyrexia" will often subside) than to keep him in bed indefinitely. Yet the latter practice is by no means uncommon, despite the possible harm to a suggestible adolescent, through sowing the seed of a persistent hypochondria in later life.

ATTACHING A LABEL

A similar common and harmful error is to diagnose anæmia in children or young adults when no such condition exists. Anæmia is a definite disorder, which can be identified, if present, by a simple blood-count. The indiscriminate use of the term to disguise ignorance of the true cause of the patient's complaints, and the prolonged and useless dosing with iron and liver that follows, cannot be too strongly deprecated. The adolescent girl who is pale, who will not eat, and who faints easily, is in all probability working too hard at school and pining with unrequited love for her form-mistress. Blaud's pills will not cure her. But in later life all her little hypochondriacal ailments and psychological upsets may be firmly attributed by her to "anæmia as a child."

All this arises from our exaggerated fear of overlooking organic disease. We have all had it drummed into us as students that to miss an early carcinoma is an unpardonable error. So it is. But what we often fail to realise is the profound psychological harm we may do by diagnosing organic disease where none exists. Nowhere is this more clearly shown than in the field of heart disease. We congratulate ourselves when we detect the early mitral diastolic murmur in the symptomless young woman about to have her first baby. Yet one sometimes wonders whether it really matters very much. With symptomless rheumatic heart disease, do we in fact succeed, by all our fussing and frowning on over-exertion, in prolonging life or, more important, in enhancing its enjoyment? Would not such patients be happier and probably live just as long (provided they were not engaged in some freakishly strenuous occupation) if they remained in blissful ignorance of their stenosed valve and fibrosed myocardium till the day when such ignorance was no longer possible? We do not, if we are wise, inform our symptomless hypertensives of the state of their blood-pressure. Should we not apply the same rule to our rheumatic-heart patients? Unfortunately there is a snag. If we do not tell them ourselves, sooner or later someone else will. And he may do so in the wrong way, suggesting to them, perhaps, that they are on the brink of death, and thereby turning them into

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terrified valetudinarians. So perhaps for the present it may be wise for us to continue to tell our rheumatic cardiacs that they have indeed got a murmur, but that there is no need for them on that account to consider themselves invalids.

We try, therefore, not to miss early valvular heart disease, and we spend a lot of time teaching its importance to students. But we are so morbidly afraid of overlooking its presence that we often commit the worse error of diagnosing heart disease when none exists. The young man with a functional systolic murmur, who gives a history of ten days' "rheumatism" in childhood, whose mother died of some vague "heart trouble," and who shows an inverted T-wave in the third lead of his electrocardiogram, is almost certain to be diagnosed sometime as having rheumatic heart disease, though he probably is a perfectly normal healthy individual. Such a diagnosis may have a devastating effect upon a suggestible youth, leading to a cardiac neurosis which may result in a life of useless semi-invalidism. Such an error is at least as great as that of failing to detect a carcinoma in a man of sixty. Nowadays, with so much emphasis on the preventive aspect of medicine and the early diagnosis of symptomless disease, there is a danger that we may forget the reverse of the coin—the perils of the erroneous diagnosis of disease-less symptoms. Let us not, in avoiding the scylla of the overlooked cancer, fall into the charybdis of the medically-induced ‡ neurosis. The first may be fatal to life, the second fatal to happiness.

CHOICE OF DRUGS

Consideration of drug therapy at once brings to mind a profusion of myths. A few drugs are of proved and unassailable value, and their mode of action established. Some are useful, and their mode of action may be partly understood. Many are almost certainly worthless, and their mode of action mythical. Yet all have their ardent advocates; and to question the traditional pharmaceutical rites is to raise a storm of unprofitable controversy. Some of the more useless preparations should be pensioned off into honourable obscurity, while others should be partially retired. Glucose, for example, will always have its deserved place in therapeutics, but its value and importance have been greatly overestimated. Many physicians do not seem to appreciate that the sole advantage of glucose over other forms of sugar, when given by mouth, is that it is less sweet and can thus be taken in larger quantities without producing nausea. It is commonly believed that by giving a monosaccharide all ready for absorption, a favour is conferred on the alimentary tract; whereas the digestive apparatus, however ill its owner, is quite capable of producing the same end-result with no trouble, and with none of the additional expense. Furthermore, the indiscriminate employment of glucose in all varieties of hepatic disorder is quite pointless. The origin of this custom, and of many other similar therapeutic traditions, is the ignorant misapplication to human beings of quasi-scientific animal experiments. It is a practice unfortunately on the increase as the habit of bedside observation declines and the reverence for non-clinical research grows. There is but one criterion of the value of any therapeutic procedure: does it, however attractive in theory or successful with guineapigs, really work with patients?

It would be wearisome to recount in detail all the many traditional customs in therapeutics whose rationale is most dubious, and whose practical value is negligible. Some have been mentioned already. The prescription of massage and exercises, without diet, as a means of reducing obesity; the faith in milk as a food suitable for every patient and almost every disease, though large numbers of adults loathe it; the routine swathing in cotton-wool of the chests of perspiring pneumonia patients, "lest they catch cold"—these and many other methods of treatment are based on theorising from inadequate experimental data, on the ancient error of arguing from the particular to the general, or on no apparent rational thought-process at all. Too few physicians take the trouble to ask themselves if such methods are of any real value in practice. John Hunter said all this many years ago in three words: "Don't think; try." The object of this polemic is to sow the seeds of doubts—healthy, constructive, scientific, doubts. We do so many things in medicine from traditional custom, handed down to us by our teachers when we were students and copied unthinkingly from one textbook to another. We are so used to doing them that we seldom stop to think whether our actions are dictated by reason or by superstition. If we do, we probably comfort ourselves by reflecting that they must be of some value, or they would not be so widely practised or so long-lived. That this assumption is entirely unjustified is shown by the many similar faiths, such as leeching and blistering, which survived and were universally practised for centuries, and yet have now been totally discarded.

A traditional custom may be very valuable. Many empirical procedures have later been shown to have a sound scientific basis. To refuse to employ a method of treatment of proved practical value because its rationale is as yet obscure is foolishly narrow-minded. But it behoves us to keep our practice of medicine in constant repair; to drag out the old customs from the cellar from time to time, and to examine them critically in the light of day. One will be found to be still useful, and to produce good results even if its modus operandi be not yet fully understood. Another will be revealed as a mere mumpsimus, and fit only for the dustbin.

PSYCHONEUROSIS

A final word on a modern myth which is rapidly being established. "Anxiety state" or "anxiety neurosis," applied indiscriminately as a label to all sorts of psychological upsets, is today the successor of the older "neurasthenia" as a species of diagnostic portmanteau. An anxiety state is a definite emotional condition, and its presence or absence is determined by a simple question: does the patient manifest anxiety? If not, then whatever psychological ailment he may have, it is not an anxiety state. The unjustifiably widespread use of the term is due, in large measure, to an unnecessary feeling of compulsion on the part of the physician to give the patient a diagnostic label. This passion for pigeon-holing is nowhere more ill-directed than in psychological medicine. Disordered emotions are peculiarly individual, and defy the procrustean diagnostic method. The result of such glib labelling is merely to confuse the ætiological issue, and to hinder a clear understanding of the principles of treatment.

In recent years there has grown up a commendable awareness of the importance and ubiquity of psychological factors in disease. Psychology and psychiatry are no longer the poor relations of medicine. But before we non-experts label a patient anxiety state, obsessional neurosis, hysteria, or (fashionable nowadays) psychosomatic disorder, let us be quite sure that we know what we mean by these terms, and whether we are justified in using one of them in any particular instance. Otherwise their true and precise meaning will become perverted, and we shall have opened up a new chapter in the mythology of medicine.

I am indebted to Dr. W. N. Mann and to Dr. M. A. Partridge for valuable suggestions and merciless criticism of this paper.

REFERENCES

British Medical Journal (1946) i, 921.
Cohen, S. (1946) *Lancet*, July 6, p. 1.
Spalding, J. E. (1946) *Ibid*, i, 643.

‡ A more elegant, though unfamiliar, epithet is "iatrogenic" (*ἰατρός* = physician; *γένεσις* = creation).

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MEDICAL PHOTOGRAPHY

A REVIEW

PETER HANSELL
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THE application of photography to medicine is by no means new; in line with the development of other applications, photography has been used as a recording medium in the practice of medicine since very early days. Indeed, the fact that books on photomicrography appeared as early as 1872 might serve as a rebuke to us today; for, though there have been advances, these have been quite sporadic, and still the subject lacks coördination and integration. In this respect we have much to learn from the advances made in other countries, notably the United States of America. A consideration of the quality of American work has tended to make many workers in this country critical of their own methods, and this in turn has led to the realisation that medical photography can no longer be done in a backstair cupboard.

To meet the requirements of complicated modern techniques, a veritable photographic laboratory is necessary, and there must be opportunity for photographic, besides medical, research. It is probably the appreciation of the scope of a modern department which has led to the abandonment of the older term "clinical photography," for its bedside implications were somewhat limiting.

Whereas photography was first introduced into hospitals and teaching institutions as a recording medium, this function has now become somewhat subservient. With the development of the epidiascope and other projectors, the tendency today is to regard photography as the means whereby knowledge may be disseminated in a visual form. Obviously, routine records must form a valuable source of such material, but the development of visual methods of education and the tremendous impetus given to this subject by the recent war need no elaboration here. This tendency is substantiated by the appearance of articles in the current journals on the subject of medical films; and, though we must welcome the display of such an interest, it would be as well to bear in mind that it has grown up totally without relationship to the development of medical photography as a whole; it therefore does not conform to a set plan, and is a trifle premature.

The establishment of a new hospital department prompted an investigation of the field, so that benefit might be derived from the experience of other workers. So far this survey has been confined to the main teaching hospitals in the London area. It has been slow and is by no means complete, for at the outset a major difficulty was experienced—that of tracing workers engaged in medical photography. Once this difficulty had been partially overcome, discussions on the subject of staff, training, salaries, equipment, and techniques were possible. The resultant information, though limited, is not without interest, and already many obstacles in the path of better medical photography have become apparent. The aim here, therefore, is to review and present some of the common difficulties, in the hope that they will be of value to those interested in advancing the subject.

ACCOMMODATION

Lack of suitable accommodation is perhaps the greatest single drawback to the natural development of a hospital photographic department, to say nothing of the demoralising effect which such conditions have on the people who work therein. Work in cramped stuffy quarters soon becomes a drudge, even if initial enthusiasm is enough to withstand such inconveniences. Few enough members of hospital committees are conversant with the processes which go to make a finished photograph, and hence are quite unaware of the intensely tiring effect of working in an ill-ventilated dark-room. The idea that any old cupboard was good enough in the pioneer days seems to have remained unchanged by the passage of time. Against this, one is, however, painfully aware of the cramped conditions in which most hospital workers have found themselves in the last few years, but in these days of planning and rebuilding it is as well to remember that, for the photographic staff to enjoy any degree of comfort, at least four rooms are essential—two dark-rooms and two small studios, one of the latter being set aside for special techniques such as photomicrography, X-ray reduction, copying of documents, and so on.

EQUIPMENT

Hand in hand with accommodation goes the consideration of equipment; only here both funds and accommodation are limiting factors. Experience has shown that medical photographers are extremely resourceful people; further, they are willing to suffer inconvenience caused by the absence of an elaborate piece of equipment—such difficulties are classically surmounted by the judicious use of plasticine and string. With the hospital carpenter as an ally, many efficient contrivances have been evolved, though the ideas have rarely been disseminated.

This state of affairs raises several interesting points. It would be interesting to know, for instance, if such resourcefulness is a necessary quality of a medical photographer, or whether it has merely been inbred through years of vain striving for more apparatus. Furthermore, it has in the past been difficult for the

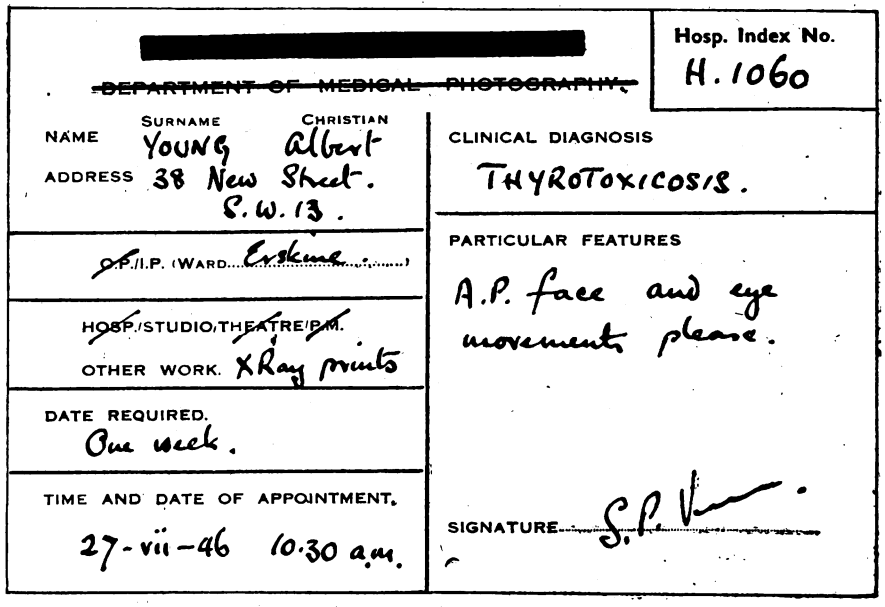

Fig. 1 (front).
Specimen request form in the shape of a standard filing card 6 in. by 4 in.

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medical photographer to publish his ideas, even had he or she so desired—the photographic and medical press have offered little space for such a limited subject. Finally, in this connexion, attention should be drawn to the fact that most hospitals are reluctant to spend what seems to them to be vast quantities of money on photographic apparatus. Often they will not be convinced that photographic equipment depreciates but little if carefully handled, and is therefore to be regarded more as a capital investment. Where the swing of the pendulum has been in the other direction, and a department boasts of hundreds of pounds' worth of equipment, a careful scrutiny will often reveal the fact that such expenditure was undertaken in a fit of aberration, and that little or no attention has been paid to basic requirements: the latest American endoscopic camera may be found, but an accurate exposure meter is deemed unnecessary.

FILING

In the light of these somewhat limited investigations, however, there seem to be one or two common failings, and one or two lines which, were they exploited, would lead to the setting up of a much more efficient and useful service. Deserving of special mention in this respect is the question of filing systems, for at the outset one can be dogmatic and state that, where the products of a medical photographic department are to be used in connexion with teaching, any money expended on filing systems forms the most solid single investment. So important is this question that a more detailed consideration is merited. Broadly speaking, three distinct types of request may be made of the photographic department at any time: (1) for work to be executed—the patient's name, hospital index number, and diagnosis may or may not be supplied; (2) for reprints or duplicates of work done in the past, when the same information, though often of doubtful accuracy, may be to hand; and (3) for reprints or reproductions of all work executed in the past three or four years on such and such a disease. It is this latter type of request which is of paramount importance to the teacher or author, and yet which renders useless all but the most comprehensive filing systems.

Clearly then, a most rigorous cross-check must be kept on such information as patient's name, index number, disease, photographic data, and filing number. Besides which, it may not be realised that copyright laws are applicable in a limited sense, so that a record should be kept of the name of the attendant physician or surgeon. This point need not be laboured, for it is obviously desirable from an ethical standpoint. The recording of these details does not involve as much office work as might be supposed; a system which has been found to work in practice has as its foundation the request form, a printed card with spaces for data on both sides, and measuring

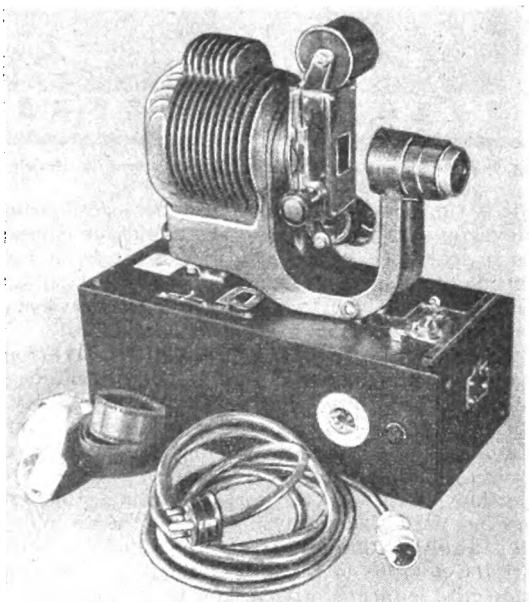

Fig. 2—A filmstrip projector.

6 in. by 4 in. to fit a standard card-index cabinet (fig. 1). Apart from the initial annoyance attendant on the birth of any new form, full coöperation from the hospital staff may reasonably be expected.

In parallel with this, the necessity of a subject-index catalogue or file has been mentioned. If teaching material is to be always ready to hand, it would seem reasonable to keep duplicate prints of all work executed, so that these may be permanently available for inspection and can, in the course of time, indicate deficiencies in the complete recording of cases. If this idea should be rejected on the grounds of the additional expense involved—though it should be remembered that filing copies need only be small—it is essential to compile some classified manuscript record to achieve the same objects, if only in part.

At the risk of appearing tedious, the office work has been emphasised because experience has shown it to be the weakest link in the chain which extends from doctor to photographic department, and from photographic department to teacher or author. Only too often has one seen good photographic records descend into the dusty basement with discarded case-histories, and, as counterparts, the unclassified negatives on the shelves of the photographic department.

DATA:—

Photo Index No. 4607271,2,3,4

NEGATIVE: File No. A.17.

Film Ilford H.P.3. 9×12 cms.
Exposure 1/25 Aperture f 9.
Lights Two No. 2. Photofloods
Distance 2 ft. 9 15"
Filter None.
Developer Kodak Rem Contrast.

Brightness Range 1:15.

POSITIVE:

Contact Print 1 Strip
Enlargement 1 × ½ plate & No. 2.
Lantern Slide
Filmstrip See filmstrip No 10.
Ciné-shot
Diagrams
X-Rays Contact prints ×2.

Notes:
File - "Thyrotoxicosis"
Endocrine Subsection

Fig. 1 (back).

FILMSTRIP

A new medium which has recently been launched in all its splendour on the educational world is the 35-mm. filmstrip. This particular medium has been in existence since the acceptance of the 35-mm. miniature camera,

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Fig. 3—Four frames from a typical 35-mm. filmstrip, showing patient with myasthenia gravis before and after injection of 'Prostigmin.'

but it is the war years which have been responsible for its development—today there are numerous commercial firms in existence whose sole purpose it is to produce filmstrips of a high order, and even these are still in their infancy, for it was demands made from the Services which were largely responsible for their creation.

Up to now, filmstrip does not seem to have found a place in medical education, despite its great potentialities which have been proved in part. As has already been intimated, there is nothing new or mysterious about this medium; users of miniature cameras have been accustomed to making little rolls of transparencies for projection purposes, these constituting the crudest filmstrips. In the strictest sense of the term, a filmstrip is a roll of standard 35-mm. positive film, on which is printed a series of pictures, radiograms, or diagrams in a definite sequence, with a view to presenting a logical story of the subject in question; when such a strip is intended for individual viewing, and is not accompanied by a verbal commentary, the necessary labels and subcaptions may be included in the frame.

It must be admitted that a higher standard of workmanship is necessary to produce blemish-free miniature pictures, whether in strip or slide form, than in the case of lantern-slides ($3^1/_4$ in. sq.), but still the method has much to commend it. Standard lantern-slides are heavy, bulky, fragile, and expensive, whereas filmstrip is free from these factors, which tend to impede a more general use. Filmstrip is cheap to produce; it is small in bulk and light to carry, a roll of 40 pictures being lighter and smaller than a single standard lantern-slide. One objection which might be raised is the fact that the order of the pictures or frames has necessarily to be predetermined; but, if such a strip is prepared to a script, this should not present a real difficulty. In any case, when the negatives have been produced, they may be printed in any order, or, alternatively, the strip may be divided into its composite frames, which are then mounted as miniature lantern-slides.

Filmstrip projectors are very small and compact, and may easily be carried from room to room as the need arises. Their construction is such that a darkened room, though advisable, is by no means essential. As a further suggestion, such filmstrips could, after being used for lectures, be filed in a library with suitable notes, so that students might at any time view them with an individual reader. It would be as well, therefore, for medical photographers to watch the development of the filmstrip industry and familiarise themselves with the techniques involved in their production, and so apply this comparatively new medium to their own uses in the near future (see figs. 2 and 3).

DISPLAY

As has been indicated throughout this article, the scope of hospital photographic departments has been

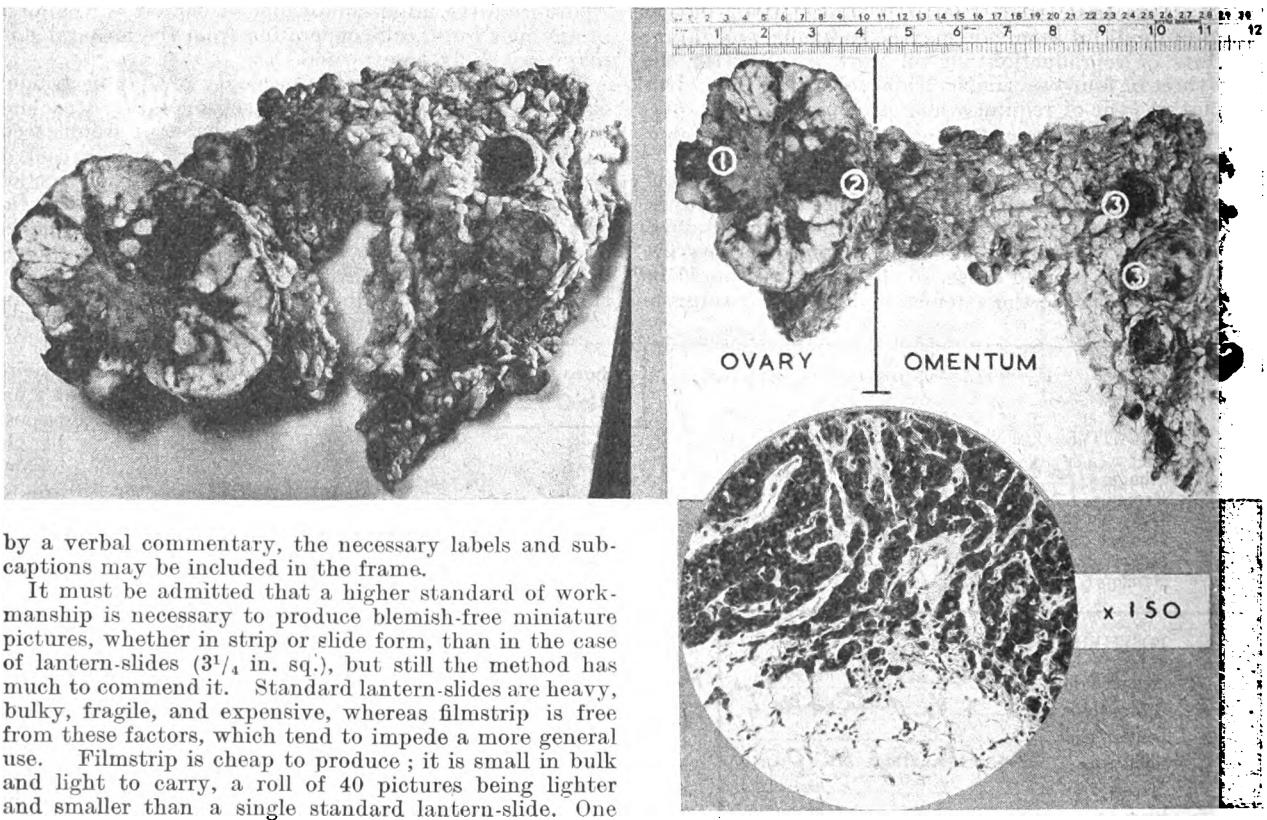

Fig. 4—Operation specimen of ovary and attached omentum: (a) a bad but conventional photograph; (b) same specimen showing its size and morbid histology; (1) metastatic carcinoma completely taking the place of ovarian tissue; (2) hæmorrhagic areas; (3) secondary nodules in omentum.

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extremely limited up to now. Little or no use has been made of display. Static displays of photographs and morbid specimens with appended notes can be of considerable value to the student. They form an easily assimilable source of information; and, with a little coöperation from the curator of the hospital museum, it would be possible to arrange for such displays to be changed at regular intervals. In this manner it is possible, for instance, to present a complete record of a particular case, whether rare or common, from the time a patient first attends, through the results of special investigations, to the logical conclusion, whether this be the necropsy room or a return to normal.

To facilitate this type of presentation, it is obviously an advantage to have the services of an artist, for the continuity between stages is not always at first apparent, but can more readily be made so by the inclusion of simple keys and diagrams. A visit to any exhibition of scientific photography will convince even the most sceptical that medical photographers are, and can be, resourceful enough to produce displays independently. The fact remains, however, that the place for these displays is in the medical school, and not so much in the exhibition hall.

MORBID SPECIMENS

While on this subject, we might digress for a moment to consider the age-old problem of the photography of morbid specimens. Such photographs obviously play an important part in displays of the type outlined above, and yet how often do we see such a photograph of this nature which conveys any real information? As students, we must all have experienced our teachers showing photographs of specimens which they had actually seen or removed, and yet which, without such a preview, conveyed no information save that of a tangled mass of remains. It is true that the photography of morbid specimens is not without some difficult aspects, but how much more valuable such a record becomes if a little care is exercised in the final presentation. The inclusion of arrows, labels, and scales requires very little extra trouble, and makes all the difference between a good and a bad record (fig. 4*a* and *b*).

MEDICAL PHOTOGRAPHERS

We have now traced the story and shortcomings of medical photography to date, but what of the future? Many hospitals are seeking to establish new departments; but even if they have the equipment and the accommodation, how are these departments to be staffed? And what inducements are there for people to take up medical photography as a career?

Many men and women leaving the Forces are attracted by hospital work, but, having decided that they would like to undertake training in the subject, find it difficult to progress beyond this decision. There is no room in this specialised field for a person without a good photographic training, and institutions which provide courses of instruction in pure photography are already booked to capacity. A further difficulty is that there are no set standards up to which a medical photographer shall be trained, either in terms of medical or photographic knowledge, and no examinations exist to test their final proficiency in the subject. One or two commercial firms run short training courses of instruction, but prospective participants are faced with the danger of a particular commercial bias being instilled into them during the course of their training; and, even so, it is doubtful if such courses are complete enough to prove of lasting value.

It is probable that the Institute of British Photographers will, in the near future, devote a section of their final examination to the subject of medical photography; indeed, such a step would be highly desirable. But, if the standards of this examination demand a lengthy and complete training, as they should, it is doubtful if people would be persuaded to undertake long and expensive training when, at the end of it, they would receive only mediocre salaries.

The medical photographer is essentially highly skilled and is expected to be conversant with more techniques than he would be in any other branch of photography. It is reasonable, therefore, to suppose that his remuneration should be at least on the same level as that of a photographer employed commercially.

The whole problem is, however, a vicious circle, since hospitals, quite rightly, do not expect to pay high salaries to semi-skilled workers; and, in the absence of the standards alluded to, it is difficult to decide on the degree of skill achieved at any one time in the course of an apprenticeship.

In addition to these purely academic considerations, one notes with interest that the Royal Photographic Society has recently set up a medical group which should be of interest to all medical photographers and doctors interested in photography. It is to be hoped that, with this backing, many instructive meetings may be held which will permit a healthy interchange of ideas among workers in this field. But such a state of affairs can only be achieved if the group receives all the support it deserves.

One can only conclude, therefore, on a note of hope: that the post-war years will see standards of training laid down for medical photographers, and the establishment of training courses comparable with those open to workers in the United States, and that the achievement of these desiderata will be reflected in the quality of medical illustrations in the future.

SUMMARY

A brief review of medical photography up to the present day is given.

A few of the main difficulties encountered in a recent incomplete survey of the field are mentioned.

Filmstrip as a comparatively new teaching medium is described and illustrated, and its application to medical education is emphasised.

The necessity for training courses and training standards is briefly discussed, and present facilities are mentioned.

THE HOSPITAL PHOTOGRAPHIC DEPARTMENT

BRIAN STANFORD
M.R.C.S., D.M.R., F.R.P.S.

THE principles of photography, long conducted empirically, are now firmly established on a scientific basis. Parallel with this transformation has been the development of a scientific application of photographic technique: the camera is now used both as an accurate recording instrument and as an instrument of research. These developments, though potentially of great value to medical science, have not yet penetrated into our practice, which still presents a huge unexplored field for applied photography.

This paper outlines the functions and requirements of a clinical photographic department which exploits fully all the potentialities that photography can offer medicine. It is appreciated that the proposals are too ambitious for immediate realisation in full, but departments can be set up now within the framework outlined, and built up steadily until all these possibilities are realised.

Photographs which recall to individual memory a particular condition are no longer adequate records for a clinic with constantly changing personnel. Photographs must provide an absolute image to the mind of a doctor who has never seen the patients before; they must even provide an absolute image to a doctor who has never seen a similar complaint before. Photographs must provide an accurate basis for measurement: the orthopædic clinic desires more accurate evidence of returning mobility

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in a stiff joint than is provided by a variable protractor resting on soft tissue; the cancer clinic desires more accurate evidence of alteration in size of a lesion than is provided by a ruler bridged across an area of indefinite edge. Photographs must provide an accurate record of change in subjective appearance: the psychiatric clinic desires regular portraits to show change in facial expressions; the hormone clinic desires regular records of bodily configuration to show effect of treatment; the welfare department desires portraits to show return of a healthy glow to the cheeks of a convalescent. Photographs must provide accurate evidence to the laboratory worker, whose researches may extend over several generations of experimental animals with a short life-span. The list is endless.

STANDARDISATION

All this can easily be achieved with suitable equipment, careful work, and recognised standardising techniques. The aim of any clinical photographic department must be to produce, after an interval of hours, days, or years, a record of a condition which is indistinguishable from the first in every respect—except that the lesion itself has changed. But standardisation of this kind, that is to say repeatability of conditions, is not sufficient of itself. It is equally important that, given two lesions, whether of the same nature or not, occupying the same relative position on two different individuals, the two records are identical except for the clinical differences they portray. Such a state of affairs demands an even greater degree of standardisation; for, besides the duplication of conditions required by the first example, we now require to have laid down standard techniques for photographing different areas of the body.

These techniques will therefore have to stipulate: (1) the angle of view at which the camera is pointing in relation to the area of the body presented; (2) the distance of the camera; (3) the disposition of the lights in the same way; (4) the nature of the lighting; (5) the colour-to-monochrome distortion convention (or the colour error introduced); and (6) the contrast convention. These requirements can be met by recording angles and distances accurately; noting the type of light-source and reflector used; including in the field of view a rule, a neutral grey-scale, and a colour-chart; and controlled developing and printing which produces, as a matter of routine, prints with matched grey-scales.

Furthermore, one view will not be sufficient; each standardised technique will demand at least two views, lighting conditions or colour-to-monochrome distortions to provide a basis for differential evaluation; and one or more of these views may be a stereoscopic pair. The grey-scales, rule, and colour-scale will be included on every print. This is not to suggest that a special view may not also be desirable; it often will be, but the standard views must also be presented in every case.

These may seem extravagant requirements, but comparable conditions are accepted practice in radiology. Every fracture is recorded from two or more angles under standardised conditions of angulation and distortion scale (anode-film distance), stereoscopic pairs are often asked for, foreign bodies are sought by taking radiographs at two different penetrations, and so on. There are, in fact, many large volumes devoted to radiographic standardising techniques.

But out of all this emerges a principle new to clinical photography. Once standardised techniques are accepted for certain areas, and once the doctors who use the records have become accustomed to the conventions, they will have achieved a state comparable to that to which they are accustomed in radiology. The records, read in conjunction and against a background of experience of records made in an identical manner, will have a meaning of their own; these records will, in fact, evoke a real image in the mind of a person who has not yet seen the condition they record. When that state of affairs is reached, photography will have become a useful adjunct to medicine.

VALID TEACHING MATERIAL

It is clear that in time sufficient material will accrue from the activities outlined above to provide pictorial examples of most clinical conditions. Moreover, since the students will have been educated to recognise the conventions adopted in these standardising techniques, they can be presented with records of conditions of which they have never seen the like and still derive a real image from them. This is a greater consideration than many experienced teachers can realise; they are prone to present as an illustration of a condition a record which successfully reminds them of the case it represents but is meaningless to the student. But the hospital photographic department will not stop there. It will make, for teaching purposes, records with a different emphasis.

For example, standardised records of a direct, an indirect, and a femoral hernia will be of value in each patient's notes, but for teaching purposes each will have to be presented alongside the other corrected in this instance not to original scale but reduced or magnified so that the pubic-spine to iliac-crest distance is identical on the paper on all three records.

Again, for clinical purposes still photographs will be taken more often than cinematograph, and slides will rarely be needed; but, for teaching students, many films, slides, and filmstrips, will be specially made.

SCOPE

The department will not confine itself to making records of the living surface. Special techniques must be elaborated for the endoscopists. The morbid pathology department will desire routine records of their material, and here again special standardising techniques must be evolved which will signify whether a mass is being viewed from front, above, or one side. The microscopists will need photographic records, and will expect the department to produce better records than they have managed previously. They will not be disappointed, for the department can introduce apparatus which is too complicated for the pathologist to wish to operate himself; they will expect cinemicrography, with variable time-scale techniques and incubated stage. The radiological department will want its radiograms reproduced on paper and as slides, and later will want help in operating the cineradiographic apparatus which Dr. Russell Reynolds has successfully brought to a stage of routine clinical use now that materials are so much faster, and low kV X-ray dosemeters have been evolved.

So far the camera has not been mentioned specifically, for each case must be decided on its own merits within the framework laid down above. Standardisation of recording conditions is equally feasible with still or cine-cameras, and with monochrome or colour reproduction.

It is obvious that, for example, flexion at the knee-joint can be accurately assessed with a double-exposure still technique, whereas mobility of the thumb requires cinematography.

Again, limitation of closure of the eyelid may be adequately recorded with a still photograph, whereas the response of facial expression in myasthenia gravis to 'Prostigmin' injection is more strikingly illustrated by cine, as would be a follow-up of a case of Parkinson's disease.

RELATIONSHIP TO OTHER DEPARTMENTS

This department will be as large and as useful as, for instance, the diagnostic radiology department. It will provide the cancer clinic with standardised records of the patient's lesion each time he attends—records taken before the patient is seen by the doctor, and dry and ready to have inked comments written on them while the patient is being examined. A similar service will be provided to the orthopædic clinic and others. It will make all the other special records that are asked of it

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by the medical staff. It will prepare teaching material on request; for this purpose an extensive cross-reference filing system will be maintained. It will have direct access to the wards, and record, with the consent of the doctor in charge, such conditions as are needed to increase this reference section, besides conditions of which it desires experience to evolve new standardising techniques. Furthermore, it will constantly evolve new recording techniques for record and research in conjunction with the other departments.

In time this department will have achieved sufficient experience to justify its taking in students of clinical photography, and so increase not only the internal efficiency of its hospital but also the range of public services provided by that hospital.

ORGANISATION

Staff.—The director will be medically qualified but chosen for his photographic knowledge and experience. It will be under his guidance that the department proves its usefulness, and a man with untried ideas will be of greater worth than one who wishes to practise currently recognised techniques.

The assistant director, who will possess a degree in physics or chemistry, will also be selected for his photographic knowledge and experience. He will bring to the department a more precise scientific outlook than does the medical director, and contribute to the general research activities of the department the knowledge in which he has qualified.

The two photographers will be trained nurses. They will possess a keen interest in photography, but may be taught detailed technique during the early activity of the department. They must be carefully selected in the full realisation that in a few years they will leave the department and found a new one elsewhere.

A microscopist will be a qualified fellow of the Institute of Medical Laboratory Technicians with special experience of histology and bacteriology. He will be given an additional training in photomicrography such as is given by, for instance, the Royal College of Science and Technology, and will be expected to contribute advances to photomicrographic technique.

Though much of the routine photographic procedure will be undertaken by all the members of the staff, a dark-room technician will relieve them of excessive routine duties and ensure continuity of output.

A secretary will control the requests, maintain the files, and attend to disposal of the records made.

A cineradiography technician, a qualified radiographer, will be given special instruction in photographic techniques and will be maintained by this department jointly with the diagnostic radiology department.

An instrument mechanic, capable of making fine optical instruments from rough designs, will be essential to the progress of the department. He will require first-class equipment, and may possibly be shared with the radiotherapy or the clinical pathology development departments.

A nurse and a porter will be attached in their professional capacities to the department.

Some members of the staff here outlined will be difficult to obtain, for a department such as is described will be unique to begin with. There is no doubt, however, that the right persons will be attracted to the posts, for the steady development of the specialised appointment of hospital physicist shows that people do exist ready to apply knowledge of one field to another, with great benefit to both. In selecting personnel there need be no discrimination of sex for any of the posts. The guiding principle will be the selection of people with tact and a kindly outlook; for, though experience shows that patients are usually fully coöperative, yet sensitive people exist who feel that in some way they are being laughed at if a photograph is asked for; the photographic department must never give cause for this suspicion to have good ground.

Premises.—As much work as possible will be done in the department itself, where centralised facilities are available and the necessity for moving much apparatus is minimised. The main studio will be at least 40 ft. × 20 ft., with the ceiling not less than 15 ft. high. Three subsidiary studios, one for standardising portrait apparatus, one for standardising full-length views, will be 10 ft. × 15 ft., with ceilings 10 ft. high; and three small studios for small objects or pathological specimens will be 10 ft. × 8 ft.

Several dark-rooms and accessory rooms will be needed:

(1) The *chemical mixing room*, 6 ft. × 8 ft., will be fitted with two sinks, shelves, cupboards, and bins, next door to (2) the *chemical store-room* which opens onto an outside service yard; next door, but with no interconnecting door, is (3) the *sensitised material store-room*, built to comply with nitrate fire-risk regulations, and also opening onto the yard as well as into the department; (4) a *dry dark-room* for loading sensitised material into holders and cassettes; (5) the main *wet dark-room (negative)*, equipped for developing all kinds of plates, films, and cine-films; (6) the main *wet dark-room (prints)* equipped with contact-printers and enlargers along one wall, and developing-dishes and sinks along the opposite wall; and (7) the *drying-room* containing drying-cupboards and racks for negatives and cine-film, and drying and glazing machines for prints, as well as print-trimmers. This will lead directly through to the secretary's office. Space must also be allocated to a copying-bench, a cine-titling bench, a cine-editing bench, and possibly micro-filming and photostat apparatus.

A secretary's office, filing-room, and directors' office will be needed. Dressing-cubicles for the patients, linen-cupboard, lavatories, and store-rooms for miscellaneous equipment will be needed, as well as a small surgery where the surface of lesions, if not already prepared in the ward, may be cleaned and redressed under proper conditions after photography.

Equipment.—A detailed inventory of equipment would be out of place here, for each department will find its own needs, but a minimal scale can be indicated for the chief items.

Studio Cameras.—A whole-plate studio-type with range of lenses and smaller-size plate adaptors; a quarter-plate studio-type with range of lenses; a quarter-plate reflex; and a Leica-type with range of lenses. A 16-mm. cine for general purposes.

Other cameras: copying camera; micro-filming and filmstrip camera; Leica-type for endoscopy; 16-mm. cine for micrography and endoscopy; and various cameras attached to the different standardising setups, and the cineradiographic camera.

Enlargers: whole-plate; quarter-plate; Leica-type.

Projectors: 4¼ in. × 4¼ in. slide; 50 mm. × 50 mm. slide; filmstrip; 16-mm. cine (silent); 16-mm. cine (sound); "movieola."

Lights: two 2-kW, four 1-kW, two 500-W variable spotlights ("moles"); two 2-kW floods; overhead batten in large studio; two condenser-discharge ("kodatrons"); miscellaneous photophloods.

Miscellaneous equipment: drying-cabinets, glazing-machines, and the like have already been mentioned. To these must be added a transmission-reflection densitometer, scales, and so on; and (in the studios) backcloths, tripods, a dolly, &c.

Specialised equipment: the department will design and build for itself gantries for photographing the bedridden, equipment for recording in the operating-theatres, and the like. The standardising equipment will be based on the X-ray diagnostic sinus-stand and over-table apparatus, supplemented by special additions.

Such, in outline, are the likely requirements of a department equipped to meet all the demands likely to be made of it, and to progress with its independent schemes for advancement of technique. This scale of premises, staff, and equipment will not be required immediately the department opens, but it will need all this and probably more within three years of establishment.

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ANATOMICAL MODELS IN TEACHING

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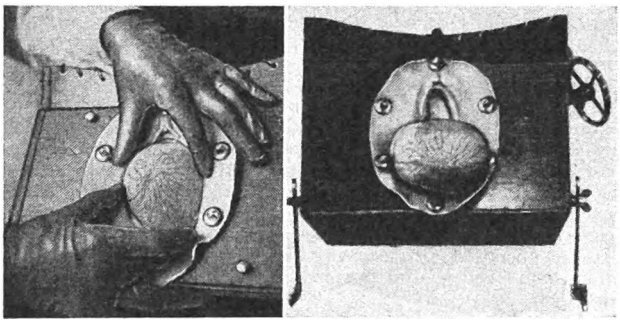
MODELS reproducing the appearance, consistence, and feel of body tissues can contribute much to medical teaching, not only by sparing patients unnecessary examinations but also by giving the student a wider experience than he would otherwise get. With this in mind, I developed some years ago a technique for making models from gelatin on a gauze base; the colouring is mixed with the material, which resists extremes of temperature. The models are supple but unbreakable.

Models made in this way have been used successfully in the teaching of obstetrics. A model of a full-term fœtus was made and a manikin devised to which interchangeable parts could be fixed. A series of models



(*a*) (*b*)

Models for use in obstetrical teaching: (*a*) delivery of the fœtal head; (*b*) external rotation of the head, showing wheel for controlling the movements of the fœtus.

reproduce successive stages of labour with the os in various stages of dilatation. By means of a simple lever at the side of the manikin (fig. *b*), all the movements of the fœtal head in labour can be reproduced. The effects of alternating uterine contraction and relaxation are simulated; and delivery at the vulva can be practised (fig. *a*). The material takes stitches well, and models have been constructed to enable students to practise stitching of the various layers of the pelvic floor. A collection of interchangeable models has been built up to represent various gynæcological disorders: the position and the feel are the same as in the human subject, but the accuracy of the sensory impression and its interpretation can be checked by removing the part representing the abdominal wall. Some models have been arranged to give practice in the lesser gynæcological operations, such as dilatation of the cervix, curettage, replacement of a displaced uterus, and the fitting of a pessary.

By the same method the complete muscular system of an entire body, with nerves and blood-vessels, has been reproduced. The different layers of any region can be represented, layer by layer, on successive models. A model of head and thorax has been built for laryngoscopic examinations, and by squeezing a bulb the vocal cords can be made to vibrate as in life. Affections of the tongue, tonsils, pharynx, and upper respiratory tract can be accurately portrayed with interchangeable parts. Complete limbs have been reproduced for practice in setting fractures; a model of the lower urinary tract provides experience in catheterisation, and, again by the use of interchangeable parts, in the identification of pathological states of the bladder.

I have demonstrated my collection of models before various congresses of the Association of French-speaking Gynæcologists and Obstetricians—at Geneva in 1923, in Paris in 1925, at Lyons in 1927, and at Bordeaux in 1931, and have received a multitude of inquiries from universities as far distant as Helsinki, Sydney, Melbourne, Dunedin, and Manila, showing that the models satisfy a real need in medical teaching.

CHILDREN WHO SPEND TOO LONG IN BED

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M.B., B.Sc. Glasg.
CHILD PSYCHIATRIST, SURREY AND SOUTHEND EDUCATION COMMITTEES

NOTHING could be farther from an accurate opinion of sleep and its control than the idea, prevalent among doctors as well as laymen, that so long as we have plenty of sleep we are all right. The doctor will advise extra sleep during an illness or in convalescence, but will not tell the parents to discontinue the extra sleep when the child is well. As a result, the parents often institute permanently the early-to-bed habit which, with its helpmate early-to-rise, is undoubtedly one of the golden rules of life. But they omit the early rising, so poor Johnny has to adapt himself to an extra hour in bed which he does not need. Months afterwards he appears before the psychiatrist because he is talking or restless in his sleep, and the story is that the illness caused it.

Directions for feeding in the most meticulous detail are known to mothers through a galaxy of pamphlets, books, leaflets, and dried-milk tins such as no civilisation has probably ever known. Sleep requires the same detailed directions, yet even medical textbooks almost ignore the subject.

Children of different ages react in different ways to being expected to sleep too long:

(1) *Infants* protest violently by crying vigorously if they are not lifted, and into this group fall most of those babies whose mothers maintain that it is better to let them cry. If a baby has an hour too much sleep during the day it will certainly cry during the night. But the crying will be put down to feeding aberrations, certainly by the parents and probably by the doctor too.

(2) *Toddlers* show restlessness, crying, and head-banging, and may develop other pastimes, such as thumb-sucking, masturbation, and bed-wetting.

(3) *Children of school age* acquire such symptoms as talking in their sleep, sleep-walking, and bed-wetting.

RULES FOR SLEEP

Babies.—All mothers should know the hours of sleep required by their babies at each month. As the age increases the sleep should decrease, not according to whim but according to plan. In the crying baby, tests for oversleeping should receive as much weight as inquiry into deficiency in diet. This plan should be calculated as follows:

Age (months)	*Sleep required (hours)*	
Up to 1	24	except for feeding
,, 2	21	
,, 3	20	
,, 4	19	
,, 5	12	+3 in morning and 3 in afternoon
,, 6	12	
,, 7	12	+2½ ,, ,, 2½ ,,
,, 8	12	
,, 9	12	+2 ,, ,, 2 ,,
,, 10	12	+1½ ,, ,, 1½ ,,
,, 11	12	+3
,, 12	12	+2½

Every baby will require his own slight modification of this plan by, say, about 30 minutes according to his idiosyncrasy, but the lay-out should remain. For example, at five months it is necessary to calculate the sleep on a basis of 12 hours' continuous sleep during the night with the variations in the day sleep. Should the child of six months sleep for, say, 13 continuous night hours then the greatest care should be taken to deduct an hour from the 6 hours allowed for the day sleep. If the 12 hours' night sleep is held as the permanent

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basis and the day sleep is varied, each child as he develops will soon give his mother an indication of how much day sleep he requires. But this is certain: variation by even 15–30 minutes from the amount of sleep each particular child requires at each month produces violent change of behaviour. The most placid infant deprived of an hour's sleep can become a veritable little screaming cat. Conversely—and this is not so generally recognised—if a child of eight months is given the sleep due to a child of six months he certainly will have his parents walking the midnight carpet. And how easy it is for a tired mother to allow her child to oversleep.

Toddlers.—Hours of sleep for toddlers should be calculated as follows:

At 2 years old	..	12 hours +1 hour in daytime
,, 3 ,,	,, ..	12 ,,
,, 4 ,,	,, ..	11½ ,,

Two years is a very difficult age for sleep regulation, because the amount of sleep required is about 13 hours. The child often sleeps more than its nocturnal 12 hours, which reduces the day sleep due to him to less than one hour. His mother, on the other hand, expects him to go on sleeping during the day. Indeed one otherwise quite good little booklet advises that "the long morning sleep" should go on until school age. If this is done, the child will certainly cut down his night sleep by waking during the night.

In toddlers who are getting too much sleep head-banging is common. I read in a popular ladies' journal recently a request to the "Aunt Jane" column for advice on this subject. Little Gwendoline was waking during the night and "driving my husband almost frantic"; it seemed to have been forgotten that the toddler was the one who was being driven frantic in the first instance. The superficial reason in most of these "sleep" deviations is in almost every instance the oversleeping of the child. The parents do not know that a definite scientific programme of gradual sleep modification is necessary, because they have never been given one.

A serious situation is created by keeping very young children, say, aged 3 years, from getting up in the morning because they have awakened too early. A healthy child of this age wakens with the dynamic force of an animal and the vocal exuberance of a bird. Many children are treated with the most appalling dictatorial tyranny by their parents because of this; force and exuberance are sapped, and the child lies in his bed meek, cowed, and completely inhibited, earning from his forceful mother the name of now being a very good boy, but later he becomes the easy victim of the aggressive child in the playground and of difficult rising in later life.

In one doctor's house in which I lived for a short time a little boy, aged 3 years, lay from 6 A.M. until 8 A.M. in a wet bed playing with the blankets. His mother boasted that he was at one time very difficult on waking, but she had trained him to lie quietly.

School-children.—Hours of sleep for children of school age should be:

At 5, 6, 7 years old	..	..	11 hours
,, 8, 9, 10 ,, ,,	..	..	10½ ,,
,, 11, 12, 13 ,, ,,	..	..	10 ,,

Many children do adapt themselves to over-protective parents by doing something, such as reading for an hour or so either before going to sleep or even on waking early in the morning. But many children cannot, or are not allowed to, adopt such a practice, and then the evil begins: masturbation or brooding is substituted for reading.

Another deviation is that the child falls asleep when he first goes to bed but later develops a light sleep during which he manifests the talking and restlessness already mentioned. In these cases there is almost always some other form of conflict, such as the association of an aggressive child with an aggressive parent, but the precipitating cause is the hour too long in bed. In other cases he cannot sleep when he goes to bed, and so later falls into a very deep sleep and possibly wets the bed or is tired in the morning.

Here are two examples:

CASE 1.—A boy, aged 14, about whom the assistant medical officer's report stated: "Referred by his headmaster for failure to concentrate and nail-biting. At home he is some days very amenable, and other days he is most aggravating. Very excitable and temperamental. Excessive finger-biting first started with air-raids in 1940. Failure to concentrate—takes a long time to go to sleep. Has taken money on two occasions some years ago but no trouble recently."

The notable feature of this report is the "dash" and small "t" for "takes" in the sentence "Failure to concentrate—takes a long time to go to sleep." No wonder he was unable to concentrate, because he was going to bed at 8 P.M. and getting up at 8 A.M.

CASE 2.—A girl, aged 6 years, was restless in school, talking in her sleep, and waking "too early" in the morning. She went to bed at 6.30 P.M. and got up at 7.45 A.M. on the instructions of her mother. At 2 years of age she used to be awake 2 hours during the night until her mother gave her a smack, and immediately she went to sleep.

The obvious psychiatric points are the expression "waking too early in the morning" and the fact that the mother's smack coincided with the end of the period of wakefulness.

On children of school age some parents are exerting alarming discipline. Boys of 9 and 10 years and even boys bursting with energy on the threshold of puberty are compelled to spend from 8 P.M. till 8 A.M. in bed while the parents boast of their carefulness in this matter. How it is going to be possible to educate the parents I cannot say.

Prof. Charlotte Bühler observes:

"There is a fundamental law of development at work. . . . The development is especially clear in the diminishing needs of sleep for the child. In the course of the first year most parents who are at all concerned with the child pay special attention to its sleep. Later this interest is not so general." [1]

Her figures are not in my opinion consistent: the observation that children of 10 months slept for eleven hours while children of 12 months slept for thirteen hours calls for further research. My own figures for infants tending toward the maximum are actually higher than hers. The times she quotes as "minimum for children and adolescents" are supported by foreign authors and correspond to my own, but they are much too indefinite at ages 1 to 3 to be of practical use.

Boarding-schools and remand homes show uniformity in treatment of the 9–13 group, although remand-home boys seem to manage with less sleep than those in boarding-schools. Mothers should take a lesson from all these institutions. There are considerable variations among the schools in the younger age-groups, with a tendency to bed the youngest at what I consider too early an hour.

The very excessive bedding indulged in by parents is not found in schools, however; and, in any case, community life is not so likely to encourage egocentric or introspective living. For this reason, to allow for individual idiosyncrasies, boarding-schools should add about half an hour to the times recommended above.

I am indebted to the headmasters of Eton College, and St. Christopher's School, Letchworth, for helpful observations.

1. Bühler, C. From Birth to Maturity, London, 1935.

JOSEPH ROGERS PRIZE.—The president of the Royal College of Physicians and the master of the Society of Apothecaries of London have awarded this prize for 1946 to Dr. R. C. Wofinden, of Greasborough, Rotherham.

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Reviews of Books

Illustrations of Regional Anatomy

(6th ed.) E. B. JAMIESON, M.D., senior demonstrator and lecturer emeritus, anatomy department, University of Edinburgh. Edinburgh: E. & S. Livingstone. Pp. 320. 75*s*.

THE wide and continuous demand for Dr. Jamieson's book of anatomical diagrams has led to a new edition. The pictures are mostly based on blackboard diagrams, originally built up, step by step, to explain the relations of the parts. The shapes of the parts are therefore shown with a sharpness of outline which may sometimes tantalise the student who finds the grey structures which he dissects very different from the purple or green ones here outlined. Learning from diagrams has the further danger that they may mislead by oversimplification. But no student who understands the functions of art would be so foolish as to suppose that these brilliant illustrations represent the reality which he will find in the body. And when he leaves the obscurities of the tissue which he finds in the dissecting-room he will be refreshed by the clarity of Dr. Jamieson's polychromatic analysis.

In the interest of Scotch exactness we must take exception to the legend of fig. 37. Surely the visual pathway in the brain should not be called "the path of conduction of light."

The Management of Obstetric Difficulties

(3rd ed.) PAUL TITUS, M.D., obstetrician and gynæcologist to the St. Margaret Memorial Hospital, Pittsburgh. London: H. Kimpton. Pp. 1000. 50*s*.

AN author generally believes, and always hopes, that each succeeding edition of his book is an improvement. In this respect Dr. Paul Titus can have no doubts, for, good as were the first two editions, the third surpasses them. The subject of sterility is now brought up to date and the chapter on X-ray pelvimetry has been rewritten. An account is given of the technique of caudal analgesia; the extraperitoneal method of cæsarean section is described; and the chapter on intravenous infusions has been completely revised, with consideration of Rh incompatibilities and erythroblastosis. Though the chapter on puerperal sepsis may still merit amplification, the work as a whole is well balanced. Each chapter may be regarded as a monograph on its subject and is followed by an adequate bibliography. Illustrations are well chosen, well drawn, and well reproduced, including eight coloured plates. The author's enthusiasm for his work is, unconsciously perhaps, imparted to the reader. The introduction contains a lengthy and critical review of the practice of obstetrics of today, which will be of value to those considering the problem in this country.

Manson's Tropical Diseases

(12th ed.) Sir PHILIP MANSON-BAHR, C.M.G., D.S.O., M.D. Camb., F.R.C.P., senior physician to the Hospital for Tropical Diseases, London, the Albert Dock Hospital, and the Tilbury Hospital; consulting physician to the Colonial Office. London: Cassell. Pp. 1068. 42*s*.

IN the 12th edition of this standard English work the section on the typhus group of fevers has been rewritten, and that on leprosy has been largely modified. Sundry figures in the text, particularly in the chapters on parasitology, have been redrawn, and the total number has been increased, while the number of plates has been slightly reduced. A chapter on the technique of injection and of blood-transfusion has been inserted. Another valuable addition is a table of the drugs employed in the treatment of tropical diseases, which indicates the structural formula of each compound, its dosage and method of administration, and the occasion for its use, with some comments on its therapeutic properties and value where these are in doubt. The material in the chapters on medical entomology has been redrafted and rearranged, with manifest improvement. All the additional information has been included without increasing the bulk of the volume, which has in fact fewer pages than its predecessor.

This edition is an up-to-date and comprehensive compendium, which well meets the present need for information on tropical diseases, whether encountered at home or overseas.

Mitchell-Nelson Textbook of Pediatrics

(4th ed.) Editor: WALDO E. NELSON, M.D., professor of pædiatrics, Temple University. London: W. B. Saunders. Pp. 1350. 50*s*.

THOUGH completely rewritten this work retains something of the tradition of the previous editions, through the close association of the present editor with the late Dr. Mitchell. It is an outstanding production: indeed, we know of no single-volume pædiatric textbook which equals it in scope. The inclusion of a wide selection of key references is one of the features which made earlier editions so valuable to the pædiatrician. Professor Nelson has been faced with the inevitable difficulties of grouping diseases according to age-incidence, infective or other nature, and systems, but has steered his way with remarkable success. The book starts with a survey of pædiatrics, followed by a section on the care and evaluation of well children which is useful and well balanced, except perhaps for the part on "mental and emotional development" which is relatively short and gives the impression of being superficial. Otherwise there is little to criticise and much to commend. Recent advances are dealt with faithfully but not at disproportionate length, and those who have been out of touch with pædiatrics during the war will, if they secure this volume for their shelves, be able to face with confidence a world resounding with words like rhesus factor and toxoplasmosis.

Government in Public Health

HARRY S. MUSTARD, B.S., M.D., LL.D., De Lamar professor of public health practice and director, School of Public Health, Columbia University, New York. London: Oxford University Press. Pp. 219. 8*s*. 6*d*.

IN 1942 the New York Academy of Medicine appointed a committee to study how to make available to the whole country the most efficient practice in preventive and curative medicine "at a lower per capita cost than the present system permits." The committee early felt the need of systematic data. The present volume, the second of twelve, describes the development of public health in the United States, and points out the directions in which further development is most needed. It is a valuable book, objective and critical. Professor Mustard shows not only where but why attempts at progress have met with success or failure. As he writes with tomorrow in view, he deals more with shortcomings than achievements, holding that future improvements "will not be attained by gloating over past accomplishments"; and instead of laying stress on the high standard of public-health work that prevails over large areas in America, he is more concerned to point out that "the local authorities of at least one-fourth of the population of the United States have so far failed to provide their citizens with anything approaching adequate health service." He concludes that what is most urgently necessary is to deal effectively with that situation. Written with a light touch, his book is not only informative and suggestive but remarkably entertaining.

Manual of Surgical Anatomy

(Pocket edition.) Prepared under the auspices of the committee on surgery of the Division of Medical Sciences of the National Research Council by TOM JONES, professor of medical and dental illustration and head of department of illustration studios, University of Illinois; W. C. SHEPARD, art editor, W. B. Saunders Company. London: W. B. Saunders. Pp. 254, 15*s*.; and pp. 195, 25*s*.

THIS manual has two almost equal parts. The first is an atlas including many drawings illustrating the anatomy of operative surgery. The second is an explanatory index. The drawings are excellent, but some have suffered by condensation in size for the pocket edition, and the book is somewhat marred by a number of anatomical and printer's errors. Also, though the terminology adopted in the atlas is predominantly that of the B.N.A., it is not consistently so. It seems rather curious that, when 7 pages are devoted to the surgery of the sympathetic, there is not a single illustration of the surgical approach to the spleen. Nevertheless the drawings of operative surgery are particularly well done, and though the manual cannot be recommended to students it should find a place in postgraduate surgery.

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THE LANCET

LONDON : SATURDAY, AUGUST 31, 1946

This Year, Next Year

IN the past year we have been thinking much about the new National Health Service, but little about the medical schools which must provide the men and women to staff it. The tasks before these schools are vast. They must repair the losses of war: new buildings planned in 1939 are still unbuilt, and many of the old buildings, besides suffering the natural process of decay, have been damaged. And they lack teachers: men who would normally have been trained for teaching and research work in the ancillary sciences, such as biochemistry, physiology, pharmacology, and pathology, have instead become much-needed clinicians.

The schools themselves have long recognised that they should be taking more students, and planning their curriculum to fulfil modern demands. The Goodenough report emphasised this duty, and the National Health Service, bringing with it a growing demand for doctors, makes it urgent. Moreover, the schools must, at least for several years, try to meet the claims of an abnormally large number of candidates for medical training, many of them ex-Servicemen. The exact number of candidates is unknown, since often they apply simultaneously to two or more schools, but they certainly far exceed the schools' capacity. How long the heavy demand will be maintained is unknown; but some see it as a wave subsiding slowly over the next few years. The coming academic year, following twelve months of mass demobilisation, will probably carry the peak; but the following year may almost equal it, because the demobilised, though fewer, will be younger, and therefore the readier to seek a university training. In 1948–49 the ranks may be swollen by the return from the Forces of the many schoolboys whose claims have been deferred this year to leave the way clear for ex-Servicemen.

INTAKE AND SELECTION

Wherever possible, the schools have responded to the present surge by increasing their intake; but though they regret the need to reject candidates who would normally be accepted, they have set their face against taking so many that the standard of teaching would fall. The difficulty of choosing the best students has brought into prominence the ways by which they are admitted. The common portal of entry, recommended in the Norwood report but not yet established, is a long-overdue reform. A boy trained at a northern grammar school for a specific examination sponsored and accepted for matriculation by a nearby university was recently refused admission elsewhere in the country because that examination is not recognised by other universities as qualifying for matriculation. The schools which insist on individual entrance examinations should acknowledge the burden that these place on candidates, and agree to a common entrance examination. In the year before leaving school young women, uncertain of acceptance at any one centre, sometimes sit no fewer than five separate entrance examinations, besides those for university scholarships and higher school certificates, from which they may hope to obtain State scholarships or county grants. No adolescent should be subjected to this unnecessary strain.

If intelligent primary selection by examination has not advanced in recent years, great strides have been made in other methods of selection. It is now generally recognised that a candidate who satisfies basic requirements in general education is not necessarily fit for a career in medicine, and, in fact, that medicine calls for qualities which cannot be assessed on the results of a competitive examination. It is therefore customary to interview candidates and to assess their personality, interests, and cultural background, with the help of a headmaster's report. At the London School of Medicine for Women, where 400–500 apply each year for 100 vacancies, the first 200 in the entrance examination are interviewed by a committee of five, sitting separately. A committee in full session has been found to overawe candidates, whereas the friendly personal interview is altogether less forbidding. After talking to ten or so applicants, the committee members meet and exchange opinions while these are still fresh in their minds; and the system has worked well. Most schools set great store on this preliminary interview, which can help to eliminate those who seek to enter the profession purely for financial gain, and others who, not knowing what they want to do, are pressed by eager parents to adopt medicine as a career. We suggest that the time has come for the more conservative schools, which rely simply on school records, testimonials, and photographs, to employ more modern methods. Selection, however careful, is not infallible; but mistakes are made much more rarely than with no selection at all. If an examination is used for initial screening of candidates it should be designed to test general intelligence rather than factual knowledge.

It remains true that no test other than that of practice can finally prove whether or not the applicant has a bent for medicine. A boy or girl who has shown great aptitude for physics and chemistry may make a brilliant pure scientist but a poor doctor; indeed, many of those that eventually make good doctors find in these subjects an obstinate hurdle, largely because they are not shown how they apply to medicine itself. Occasionally a student after admission does not come up to expectations; and then, both to save his own time and in justice to another who would benefit by training, he is displaced as quickly as possible. At the London School of Medicine for Women, for example, the student who fails once in the first year's examination is asked to leave. Elsewhere, two chances are usually given, but careful watch is kept, sometimes through a progress committee which reviews doubtful cases every six months. The strain imposed by a single now-or-never chance must undoubtedly deprive the profession of some good doctors.

EX-SERVICEMAN OR SCHOOLBOY?

Most schools have welcomed the Ministry of Labour's ruling that up to 90% of places in the coming academic year should be reserved for ex-Servicemen.

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The grants made to successful applicants under the Government's further-training scheme are probably generous enough to move a few unsuitable candidates to apply; but at all but one of eleven centres recently visited the general quality of men from the Forces was thought to be high. One dean holds that "the top and average are excellent, but the tail may be rather bigger than usual." The authorities have recognised the doggedness that prompts a man, five, six, or more years after leaving school, to return to academic training, beginning, more often than not, with the matriculation examination. This group has the tremendous advantage of mental maturity and judgment, so often lacking in the young students of the war years; their work may benefit, too, by the wish, not so acute in the younger, to qualify and become independent with the least possible delay. They deserve first consideration, in common fairness, but the claims of those they displace must not be overlooked.

This year the medical schools will be unable to take more than a few chosen schoolboys; the remainder will join one of the Forces, in which they may serve for two years before starting their medical training. Most educators complain that medical students are subjected to continuous and usually concentrated teaching, always under the duress of examinations, from early youth up to the twenties. There should, they reason, be a break between school and medical training, so that the decision to take up medicine, and the course of study itself, may be approached with adult judgment. Such a break, they argue, is needed more by the medical than by any other student, because in medical training he finds a course so concentrated as to offer him little chance of mixing with students in other faculties; and indeed by reason of numbers, community of interest, and lack of opportunity (for apart from Oxford and Cambridge few universities have an established college life) almost his sole companionship is with other medical students. Some teachers therefore welcome the break enforced by military service; they advise those submitted to it to seize this chance of broadening their outlook, and to further their general education with the help of the Service educational authorities. Military training is said by a few to foster mental idleness and disinclination for study, but the keenness of those already released contradicts this rumour.

However, the system has its grave drawbacks, prolonging the period of dependence and postponing the prospect of marriage beyond even the advanced age customary among doctors. Certainly a schoolboy may get a good insight into Service conditions; but if he is ever recalled to the Services, it will be not as a combatant soldier but as a doctor. It would therefore be a gain for the Forces if he did his period of service after qualifying, when he is able to acquire the special techniques of Service doctoring.

CUTTING THE COAT

Most medical schools, and certainly the smaller ones, want to expand moderately as the Goodenough Committee advised. At most centres (Edinburgh is a notable exception) greater numbers could easily be accepted in the clinical years. There are, however, serious local difficulties. One school at least is noticeably short of clinical teachers because these are still being claimed by the Forces; others, usually because they need new buildings, have too few patients in their principal hospital. This second obstacle could undoubtedly be surmounted by closer liaison with municipal hospitals—which some teaching bodies are reluctant to achieve, partly because former relations with these hospitals have not always been of the happiest, and partly because they are not conveniently near. But the war has shown that the arrangement, however tiresome, is workable. Nearly all schools are increasing the number of their teaching appointments; at Birmingham two junior chiefs are now being appointed in place of one, because a call for consultants at the periphery is expected.

The difficulties at most centres are more stringent in the premedical and preclinical years. Unlike the schoolboy entrants, few ex-Servicemen have passed the first M.B. examination; thus there is now a bottle-neck in the first-year departments. Where faculties of science are responsible for instruction in the first-year subjects—physics, biology, and chemistry—the medical student may sometimes receive less than his due. Not unnaturally teachers in these faculties are apt to think first of training pure scientists from whose ranks their own future teachers and research-workers will be drawn; and they can hardly be blamed for doing so when the country is as short of pure scientists as of doctors. The Barlow Committee estimated that Britain in 1955 will be 26,000 short of the required total number of scientists, even if universities train men to their full capacity in the intervening years. These faculties also train dental and veterinary students, besides those who instruct school-teachers, and those learning domestic science, nursing, and physiotherapy; and each of these groups is short of personnel. Some think that medical schools might give up teaching these preliminary subjects and accept students only from the beginning of the second year. Each year a small proportion fail in the July examinations, and thus a small but unpredictable number are unable to take the places allotted to them at the start of the second year. If a common school for premedical teaching were shared by two or three medical schools, no second-year vacancies need be wasted. But this would favour mass-teaching, against which modern opinion has set its face; it would deprive the first-year student of medical-school life, from which he is believed to benefit even at the start of his training; and it might delay that revision of first-year work and its closer association with clinical medicine which is the ambition of most teachers.

BUILDINGS AND STAFF

Numbers are further restricted by lack of laboratories and of teachers in the technical subjects. Before the war, many schools had plans for expanding these departments, which even then were too small for teaching or research or both. None of these plans have been carried out; and now the demand for teaching has grown and may be expected to grow still further. Charing Cross Hospital seeks to relieve the burden on King's College by building a new temporary department for the teaching of anatomy and physiology, to start work in October, 1947. Other schools have no such immediate prospect. At a few, the sole obstacle to the acceptance of more students is the lack of laboratory space. These are making the utmost use of existing buildings by

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holding classes in duplicate and triplicate; but this is an inconvenient arrangement, with limited possibilities, and, unless teaching staff and research space can be correspondingly multiplied, may even lead to degeneration of teachers into hacks. It is a disturbing thought that, despite the growing need for doctors, suitable students are being turned away simply for lack of a building. A comparatively small amount of work on repairs and construction would make a very big difference, and we trust that the Government will favourably consider the proposal that two or more firms of building contractors should at once be allocated to the universities in order that it shall be done. With such aid, if priorities were rightly chosen, notable expansion would be possible within a couple of years; whereas if the claims of domestic building are rigidly and exclusively enforced the development of essential teaching institutions will be indefinitely, and dangerously, postponed.

Buildings, however, are only a means to an end, and usually the problem of space is complementary to the far more difficult problem of staff; for existing staffs are too small to make full use of new and larger buildings, while larger staffs could not be contained in those now in use. Moreover, though new departments could be completed in a year or less, useful additions to the teaching and research staff could not be trained in less than four or five years.

The medical schools want, above all, to avoid progressing in a series of jerks; but that is exactly what they may be compelled to do by their ignorance of when and to what extent their demands are to be met. The best they can now do is to train staff, while waiting for new buildings to be constructed at some unknown date in the future. Throughout the war those who would normally have taken such training helped to meet the call for clinicians, and there is today such a shortage of trained biochemists, physiologists, anatomists, pathologists, pharmacologists, and bacteriologists as may not be made good for a generation to come. Not only must these men be trained, but the country's impaired prestige in research must be restored. It is a giant task, but fortunately the right kind of men are volunteering in increasing numbers. The rising trend of university salaries has attracted some, and the anticipated "flattening" of remuneration in the new health service has moved others to select an interesting career in teaching and research. Some universities—notably Birmingham, where money has been set aside for training men in the ancillary sciences and where a research institute is contemplated—are doing their utmost to overcome the deficit. In the final count, a man's readiness to join the staff of a department is decided largely by the reputation of its head and by its research programme. Of late years some men with the keenest minds have been inclined to give up teaching and concentrate solely on research; this should be checked, for students benefit greatly by association with those who are at the growing-point of their subjects. Instruction by those that teach without at the same time engaging in research degenerates all too often into coaching. Thus whenever new and larger laboratories are built for students, suitable research accommodation must be constructed for those who will teach. If classes are too large there is always a danger of mechanical and impersonal teaching; and when numbers go up without a corresponding increase in staff, teachers are robbed of so much time for research, which may cause some of the best to withdraw completely from teaching.

NEW SCHOOL FOR WOMEN?

If competition for medical training is now keen among men, it is, and has long been, keener among women. Even the gain, in 1947, of 15% of vacancies in the London men's schools will bring little relief, since the London School of Medicine for Women is to take 15% of men. Those responsible for the training of women students do not, on the whole, favour the enforcement of this 15% quota on schools which are reluctant to accept the agreement. They think that either a few schools should accept men and women on a fifty-fifty basis, thus becoming truly coeducational, or that an entirely new school should be established. They contend, too, that places should be awarded by open competition, regardless of sex. One of the schools which has accepted women students in the last few years only has found them intellectually and personally acceptable and would willingly take more; some of the others demur at the prospect of accepting women, reiterating traditional arguments which in practice have little substance. The common complaint that the training of women is a waste of time since they often marry or otherwise retire is not substantiated by a recent survey which suggested that the proportion of those qualifying who are totally lost to medicine through marriage and all other causes—including retirement at 60—may be under 15%.

The survey was undertaken by the Medical Women's Federation in 1944. A questionary was sent to the women graduates of 21 British medical schools, and 4369 replies were received. Of these women, 3179 (73%) were in full-time and 574 (13%) in part-time work. They included 660 women under 30, of whom 83% were in full-time and 7% in part-time practice. Of 2865 women in the main working years of a doctor's life—between, that is, the ages of 30 and 59—75% were in full-time and 14% in part-time practice; so the proportion lost to medicine between these ages was only 11%. After 60, of course, there was a steep rise, 48% going out of practice.

Women clearly deserve a large share in any further increase in student accommodation. Despite the Goodenough Committee's recommendations, we suggest that the West London Hospital, which has done much for the instruction of women students in the war, should not lightly be abandoned as an undergraduate teaching centre. The successes of its students in examinations, and the growing inclination of entrants to place it at the head of their application list suggest that it should be developed rather than suppressed. Many competent observers believe that this nucleus could well be used as a basis for a new school, especially since there is little immediate prospect of having one elsewhere in the country.

Outside London the foundation of another school must wait upon the granting of a charter to a new university. Even then, ten or possibly twenty years would be needed to build up its staff and organisation. When the time comes, two parts of the

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country may be considered: the south-west and the East Midlands. The south-west is now served by Bristol, with a domain from Gloucester to Land's End—a stretch as long as the distance from London to Blackpool. Of the possible sites Plymouth is well placed for clinical teaching, but Exeter already has a college which has shown drive and initiative. For the East Midlands, Nottingham has a well-established college and suitable buildings, but Leicester can advance at least equal claims to recognition as a clinical school.

A COMMON PURPOSE

These prospects lie in the future. Can nothing be done to make a better job of the present? Some of the medical schools give a strong impression of fighting in the dark. They do not know the number of students they will be asked to accept in 1947–48, nor the method of allocation; they have not been told when their urgent building programme can begin; and they have no way of judging the effect of the new national service on the demand for graduates. Each school has vigorously set about righting the damage of war, inspired by the thought that the Goodenough recommendations may be acted on some day. But their efforts, though energetic, are local and only casually integrated. Surely a central body—perhaps a standing committee made up of the deans of all schools—could plan for the country at large, and declare the needs of the schools in a strong voice? This body might well keep a register of all candidates for entrance to medical schools, and set a common entrance examination for the schools which insist on this preliminary. There is no reason why it should have any other executive authority: the schools need not fear to lose their autonomy if such a body is formed—they would, as now, be subject only to the requirements of the General Medical Council. Any attempt to set up a common schedule of teaching for the whole country would of course be disastrous, and the suggested body would be well placed to ward off any such attempt. Its other functions would be to decide, by discussion among its members, which schools had prior claims to new buildings; to use every means to put the Goodenough recommendations into effect; and to act as a clearing-house for teachers, so that those schools which needed additional staff most urgently might have a reasonable chance of getting them. If more graduates were needed, the council of deans could decide at which schools the numbers should be increased, and to what extent. In much of its work the council would be supplemented by the medical-education committee of the University Grants Committee, which might, through the council's activities, be prompted to give a more decided lead.

To be lively and stimulating, medical teaching must always be conducted according to local inspiration and taste. But the training of doctors is a national undertaking. The schools should see themselves as a team, serving the whole country not in a narrow spirit of rivalry but as component colleges in a national university.

Air Marshal Sir Harold Whittingham, F.R.C.P., has been appointed medical adviser to the British Red Cross Society.

The Teaching of Anatomy

IT has long been customary for teachers to admit that their students have too much to learn; yet the load grows automatically, year by year, with each advance of medical science. The sympathetic teacher in fact usually favours ruthless pruning of everything except his own subject; and this he successfully resists. On the preclinical subjects the Goodenough Committee held that there is "an urgent need in every school for a new viewpoint" and for the drastic elimination from the curriculum of a mass of detailed information "which serves only to clutter up the student's mind and deaden his interest in subjects that can and should make the liveliest appeal to him." And indeed it is very widely agreed that the anatomical burden, especially, is too heavy. The General Medical Council have not yet published their plans for overhauling the students' timetable, but while we wait for these we might try to fit the anatomical curriculum for its proper task of training general practitioners.

Let us then begin by reducing the enormous volume of factual memorisation which topographical anatomy inflicts on students not destined to become surgeons. And here a notable step has now been taken by Prof. W. E. LE GROS CLARK, F.R.S., whose *Practical Anatomy Revised and Rewritten* is to appear next month.[1] His preface shows a welcome change in the oppressive anatomical wind which has hitherto prevailed.

> "The fact is," he says, "that current anatomical textbooks have developed and expanded by a process of gradual accretion from the days when the subject was still in its early descriptive stage, when the interest of the anatomist was mainly focused on rather abstract problems of morphology, and when (before the modern organisation of medical services had been developed) almost any general practitioner might be called on to attempt major operations of an emergency type demanding a fairly intimate knowledge of topographical anatomy."

Probably less than 5% of medical students, he remarks, will ever undertake major surgery.

> "It thus appears unnecessary that the remaining 95% should still be required to study and memorise factual data whose importance lies solely in their application to specialised operative technique. The few who later decide to take up surgery as a career should be required, after qualification, to complete a further course of dissection, including all those details of topography which are or may be of direct importance for the surgeon."

He thinks the student's knowledge of topographical anatomy should be sufficient for the following purposes:

> "To provide a basis for an intellectual appreciation of the morphological principles which determine and influence the organisation of the living body" (principles which the premedical course of biology should already have instilled to some extent); "to interpret in terms of structural organisation the normal physiology of the human body (and therefore to anticipate the probable results of interference with normal structure and structural relationships); to recognise the anatomical basis of the clinical signs and symptoms of disorder due to injury or disease; to understand the anatomical factors involved in the development of pathological processes and the possible complications which may arise therefrom; and to employ competently all the ordinary methods of examination and treatment (including minor surgery) which involve anatomical knowledge."

1. To be published by Edward Arnold & Co., London, on Sept. 12th. Pp. 470. 25s.

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He wants the decks cleared, partly to provide more room for

> "the study of morphogenetic principles either in embryological development or in the post-natal growth and repair of tissues, a thorough grounding in radiological and surface anatomy, a more systematic study of muscle actions and joint movements, a fuller consideration of the anatomy of the nervous system and the special senses (with special reference to their functional disorders), and an introduction to the principles and methods of experimental anatomy."

Most clinical teachers will find these views full of common sense; but do they go far enough? Is a "fuller consideration of the anatomy of the nervous system" justified? The practitioner who knows how little of the anatomy of the nervous system he remembers from second M.B. days may well feel that he should have been taught the broad principles of nervous-system anatomy, on which he now depends, rather than a mass of indigestible detail about the caudate nucleus and the bundle of Vicq d'Azyr which bewildered him and obscured the pertinent facts. The neurologist, the ophthalmologist, and the otologist should, like the surgeon, defer the acquisition of special knowledge until they are qualified. Again, does the future general practitioner need to study more systematically the movements of joints and muscles when the orthopædic surgeon or neurologist can advise on cases of difficulty? Surely time saved on topographical detail should be devoted to subjects of great vocational use (such as surface and radiological anatomy) or pre-eminent in educational value (such as the principles and methods of experimental anatomy). The change needed is reorientation of the anatomical course with emphasis on function rather than structure. The preclinical student needs to be fitted by his anatomical knowledge to appreciate more readily and intelligently what is to follow in the clinical years.

Some bold spirits have suggested that the education of the future general practitioner and specialist should diverge at a very early stage and that different courses of anatomy should be provided; but no student in the early stages of training can be sure where his abilities lie; moreover, in these days at least, a decision to marry may oblige him, as soon as he is qualified, to exchange the dream of the consulting-room for the reality of the surgery. Some think it a waste of time for every student to dissect the entire body; but actual dissection gives a familiarity and contact with the structures of the body which cannot be gained from specimens and models. There is much to be said, however, for allowing students to attend a few preliminary classes at which an expert rapidly dissects and demonstrates the whole body. The beginner will then start work with a mind oriented to think in systems rather than structures.

Professor LE GROS CLARK's book, with some 450 pages, still seems to us to be on the large side; or rather it combines in one book what we should like to see as two. Not long ago we advocated [2] a revival of the small inexpensive dissecting manual, which can be used for practical work and thrown away when soiled. Students can use such a work concurrently with a textbook designed to give them a coherent knowledge of the systems. Complete accounts of the bodily structures, for the use of teachers, students of surgery, and research-workers, should be reserved for reference works. In covering dissection as well as the fundamentals of anatomy, Prof. LE GROS CLARK has been obliged to approach his subject by regions instead of by systems. Though he seems to us to give much more detail than the general practitioner may reasonably be expected to need, he fears that his fellow anatomists may think he has omitted many essentials. Some light might be thrown on this point by setting a test paper on anatomy to a group of general practitioners of 10–15 years' standing: what they know would surely be a useful index of what they need to know. But whether his book is too long or too short, or of exactly the right length, Professor LE GROS CLARK can be sure that most teachers, and all students, will welcome his positive effort to reform the teaching of anatomy.

2. *Lancet*, 1944, i, 569.

Annotations

MORAL AND INTELLECTUAL LEADERSHIP

THE British Institute of Philosophy was founded 21 years ago to serve as a link between philosophy and the everyday world. At its coming-of-age meeting last month it listened to a symposium of papers by a philosopher, a scientist, a divine, and a classicist, on the Need for Moral and Intellectual Leadership. Through all that was said ran an urgent sense of apprehension for the future of our civilisation, now threatened with destruction because science has put in our hands tools of immense power and reach, which we yet lack the wisdom to use in our own best interests. The theme is of importance—not merely of theoretical interest but of plain practical importance—for every educated man, and not least for the doctor.

Viscount Samuel, speaking for and to the philosophers, urged that in this crisis their duty does not end with the serene detached contemplation of human life and human thought; they must emerge from their academic seclusion and say something that will affect human action. That a philosophy can be a motive force, Nietsche is evidence enough; Hitler chose his works as a present for Mussolini. That recent years have heard no clear expression of a beneficent philosophy may be due to the discordant voice and laboured utterance of present-day philosophers, and their greater concern with the limits of human knowledge than with the needs of human welfare. But it is possible, and desirable, that "philosophy, in this country and other countries, condescending to be comprehensible, inspired by a Socratic sense of mission, linking hands with religion, science, and scholarship, may yet renew her great days, teaching the teachers of the peoples and leading the leaders."

Prof. A. V. Hill, F.R.S., described human society today—in scientific phrase, and mild enough at that—as being in a highly reactive state. But reactions in human society, unlike those in chemical mixtures, depend on the initial activity of a few of the members, not on a general bulk initiative. These few are the leaders. Good leaders will use their reason and acknowledge moral principles. The majority of mankind "will respond to leadership, but the leadership, if it is to be effective, must appeal for the most part to feeling rather than to reason. The problem, therefore, is to find leaders who, basing their policy on reason and morality, are capable nevertheless of appealing enough to the feelings of their fellow citizens to cause them to follow." Science, so far as it can do so without compromising its prime loyalty to truth, should make some contribution to that leadership.

Canon Leonard Hodgson, professor of divinity in Oxford, trying to define a creed or philosophy of life,

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quoted Shaw: "what a man believes may be ascertained . . . from the assumptions on which he habitually acts," whether those assumptions are expressed or implied. A satisfactory creed must be rationally coherent, and it must empirically fit the facts of life and experience. The Christian theologist's contribution to the discussion on leadership is his claim that the events described in the Bible story are of central significance to the proper understanding of human life, and to the development of a satisfactory creed. But Canon Hodgson rightly adds that this claim must be continually subjected to the criticism of philosophy and of experience.

Prof. E. R. Dodds, regius professor of Greek in Oxford, was concerned with the responsibility of the universities in training leaders. He condemned the nineteenth-century conception of a university as "a holy citadel of pure scholarship" because it was incomplete. He urged that the universities should today make a deliberate contribution to the needs of a planned democratic society. Their problem is to provide society with the men it needs, and at the same time retain their freedom to pursue truth for its own sake. Their difficulty is that society demands mostly technicians and specialists, whereas society needs leaders with general wisdom, vision, and perspective. Their answer must be a continued effort to train students to think and to judge for themselves, on a broad basis of knowledge and experience, and with absolute intellectual honesty.

These stirrings are not merely pious panic induced by the atom bomb. They are the response of honest men whose social conscience has been moved, who are aware of the process of social integration that is the path of British democratic development, and who feel it their duty to take an active part in it. Most doctors owe some thought to these questions too. For medicine is—naturally and inevitably—caught up in the integration process. Doctors are now confronted with duties to society as well as with duties to the individual patient, and must face and deal with both. The peculiar intimacy of their relations with their fellow men gives them an influence on the behaviour and the mental attitudes of the community more powerful than they realise. The success with which the profession solves its major problem of preserving freedom and initiative within a nationally organised medical service will influence a whole series of similar questions of administrative structure in other spheres of activity. The medical schools, on the one hand more than ever built in to the universities, on the other in close contact with the social and individual problems of health and disease, are well placed to design the bridge between university studies and the human affairs of today, between honest thought and unselfish action. Medicine is in a position to show the world, by example rather than precept, that good leaders cannot be made to order, but that a free and stimulating intellectual climate will favour their development and that recognition and responsibility are their due when they appear. In sum, medicine is no longer an isolated affair between doctor and patient: the relations of both to the community are claiming an increasing amount of attention. In a more closely knit society medicine faces new difficulties, new responsibilities, and a more complicated task. The problem of leadership closely concerns it.

MODELLING IN MEDICINE

MOST of us can recall times, particularly during our dissecting days, when a model of an obscure anatomical recess served to enlighten our perplexity. Models may also be used for demonstrating pathological lesions and for illustrating surgical techniques and approaches. Bulbulian [1] discusses the ways of making them of plaster-of-paris, papier-mâché, wax, plastics, metal, or glass.

1. Bulbulian, A. H. *Proc. Mayo Clin.* 1945, **20**, 383.

Direct freehand modelling, which involves the difficult and tedious procedure of copying, is necessary only for large-scale reproductions of intimate structure, such as cells or parasites. This method, which was used by the Greeks and Egyptians in antiquity for the portrayal of deformities, has now been replaced for general purposes by simpler techniques. A direct cast from the actual specimen is the easiest and best method, the medium being applied over the object to produce a negative cast from which the final positive cast is moulded. With hollow structures like the bronchial tree or cerebral ventricles no intermediate stage is needed, for a direct negative cast can be made by filling the lumen with the casting material. Though the casting method is quick and accurate, care is needed to procure a smooth impression and to impart the correct colouring. Direct casting is sometimes impracticable, as with the irregular surfaces and crevices of surgical exposures and post-mortem dissections. Here an indirect method is used, by making a freehand model in clay or other plastic, which is then reproduced by casting. With this process essentials can be judiciously emphasised and non-essentials eliminated; and it is particularly suitable for such intricate structures as the ear, eye, or embryo in magnification. But it is very lengthy, and the colouring is quite inaccurate unless it is incorporated in the medium from the start.

Finally, various composite models have been designed to illustrate particular techniques; thus for training students in endoscopy a plaster cast of head and trunk can be combined with a modelled lesion at the end of a dummy gastroscope. On another page, Professor de Seigneux describes the use of models made from gelatin on a gauze basis to give the student experience of the appearance of tissues and their consistence to palpation. Though useful in imparting basic principles, especially in obstetrics, models can never replace practice on living tissues; passing a catheter on a dummy urethra or setting a fracture in a limb which does not swell after injury is not the best of preparations for undertaking these operations on patients. It is a pity that the modern increase in the student-patient ratio makes such substitutes necessary.

PHYSIOLOGY OF THE NEWBORN INFANT

THERE may now be little need to emphasise the principle that consideration of disease should be preceded by study of the normal. There are still, however, many gaps in our physiological knowledge, one of the largest being the effect of age on body processes. Physiology, as generally taught, is based on observation of fully grown animals and men. Differences between species are largely neglected; students sometimes feel that frogs are not quite the same as men, but the view of their elders and betters seems to be that physiology is essentially the same throughout the vertebrate kingdom. The effect of age on a normal process is seldom demonstrated; and because few physiologists have interested themselves in the significance of age, progress has been retarded. Pædiatricians, for example, have been hampered in investigations and treatment by not knowing where the normal ended and the abnormal began; they have often been forced to work out the normal and its variations for themselves, and physiology owes these men a debt. Their findings, however, are scattered through the literature, and the time has come for a book on the physiology of infancy, bringing together all this knowledge.

Clement Smith [1] has now compiled just such a book, which will be welcomed by everyone interested in the subject. It is not very long—the second edition will probably be longer—but it is packed with facts, mostly

1. Physiology of the Newborn Infant. Clement A. Smith, M.D., professor of pædiatrics, Wayne University; medical director, the Children's Hospital, Michigan. Springfield, Illinois: Charles C. Thomas. Pp. 312. $5.50.

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well considered and presented, with an invaluable bibliography at the end of each chapter. One of the work's most pleasing features is the international character of the references; too often nowadays these tend to have a somewhat parochial flavour. The author rightly considers that study of the physiology of infancy must begin with the fœtus, but he preserves a nice balance. Chapters are devoted to respiration, the blood, icterus neonatorum, energy metabolism and heat regulation, the digestive tract, nutrition, mineral metabolism, renal physiology, endocrines, and immunity, and each ends with a summary of its bearing on clinical medicine. Hidden behind the back cover there is perhaps the most useful feature of the whole volume—a table of normal values.

The material of this book is of great importance to medicine. It underlines the fact that our knowledge of the subject has only just begun to develop. Here there should be no national barriers, no call or excuse for secret research; and if the spirit of international coöperation returns, great advances may be made in the next twenty years.

CLINICAL PHOTOGRAPHY

CHEMICAL pathology now enables us to define with almost mathematical precision minute changes in many bodily functions; and the clinician is increasingly alive to the need for exact records of the changes he observes in his daily work. This has prompted several hospitals to plan photographic departments, and the Westminster Hospital medical school has taken the lead by appointing a doctor wholly employed on this work. But interest in clinical photography is not confined to hospitals: among the societies the Scientific Film Association and the Royal Photographic Society both have medical groups; and the Royal Society of Medicine early this year devoted an entire meeting to the uses of photography in diseases of the skin.

The practice of relegating the hospital photographic department to a basement room, under the care of a poorly paid technician, no longer suffices. On other pages Dr. Peter Hansell and Dr. Brian Stanford suggest requirements for the promotion of this neglected supplement to the clinician's vision. There may be delay before their recommendations are fully met, if only through lack of trained staff. It is hoped that the schedule for the training of hospital photographers now being prepared by the Institute of British Photographers will be followed by the adoption of a course and examination which will give trained medical photographers a status similar to that of trained radiographers; with the demobilisation of the many who have had special experience of photography in the Forces, there should be no lack of suitable candidates. The recruitment of doctors to supervise the departments may be less easy; probably few will at first be willing completely to abandon clinical medicine and to combine their hobby with their professional training in the work of the photographic department. But medicine will be greatly benefited by those who take the plunge.

GROUP PRACTICE IN AMERICA

DURING the last thirty years medical group practice has extended in the United States, especially in the West and Mid-west. There are, broadly, three kinds of groups, organised to meet varying needs: (1) "reference groups," such as the Mayo Clinic, where there is a staff of over 600 doctors, provide diagnosis and treatment, primarily over a short period, for patients with unusual or complicated conditions; (2) "diagnostic groups" do no more than make a diagnosis and furnish a report to the doctor referring the case; while (3) "service groups," now numbering about 500, offer family medical care and the commoner specialist facilities. The groups have formed a central organisation, the Medical Group Practice Council,[1] which held its fourth annual meeting at Princeton, N.J., last May, when it was announced that next autumn the New York University College of Medicine will establish the first medical group-practice unit to be undertaken by a medical school. An account was given of a group-practice unit that looked after the 75,000 workers on the atom-bomb project at Oak Ridge. Within a year the Federal government built in the wilderness the atom-bomb factories and the town of Oak Ridge, together with a 325-bed hospital and the necessary clinics. Before the town was built there was not a doctor within twenty miles of the place. A voluntary health-insurance organisation, the Oak Ridge Health Association, was formed on a prepayment basis and financed by contributions from the employed persons with a government subsidy; and a complete service of medical care was provided by 50 army doctors working from the hospital. On the average, 600 patients were treated daily at the clinics, the maximum number being about 750. The unexpectedly rapid demobilisation of medical officers after the end of the war led to the discontinuance of group practice at Oak Ridge, where, it was stated, there are now 23 private doctors practising for fees.

Prominent among the questions discussed at the Princeton meeting was how to make known the advantages of group practice to the American medical profession, and particularly to the younger doctors. The Medical Group Practice Council proposes to prepare a manual explaining in detail what experience has shown to be the elements essential for success. The council has, however, already published an interesting pamphlet, *Solo or Symphony*, for the guidance of demobilised doctors contemplating entrance into medical group practice. Its 44 pages contain a remarkable fund of practical information, and it concludes by laying stress on the importance of planning the staff of a medical group to suit the varying local conditions: "You must carefully tailor its size and specialist representation," it is said, "to fit the size and requirements of the community you plan to serve."

ELEVEN PLUS

OUR leading article speaks of progress in the technique of selecting candidates for a career in medicine. Unhappily, despite the Education Act of 1944, there has been no similar advance in the choice of boys and girls for higher education, and some of those who might benefit most by medical and other university training never reach the stage of presenting themselves for admission. The child of the less well-to-do, now as before, gets his last chance of a grammar school, and thence a university education, when he is just past the eleven-year-old mark. Examinations, as is acknowledged in modern methods of choosing medical students, are apt to give a distorted reflection of capacity; and the objections to relying on them are doubly cogent at the early age of 11. A child may be a "late developer"; he may, through illness, have missed six months' schooling; he may, as often happens in the early years, have brilliance but little application; he may have been unwisely taught; or he may, again, show himself in a poor light when submitted to the routine of the formal examination. If he is a victim of any of these circumstances, he may fail, and by this single failure the doors to a university education are as good as barred to him before he enters his teens. Under the new Act authorities are empowered to transfer children to grammar schools at a later age, but it remains to be seen how far they will do it.

Children whose parents can bear the cost of continued post-primary education are not exposed to this hazard;

1. Address: Medical Administration Service, Inc., 1790, Broadway, New York 19, N.Y., U.S.A.

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and, without previous competitive examination, they are free to matriculate at the age of 16 or 17. The bias thus strongly favours the more moneyed section of the population. This issue has a twofold implication—social and national: social in that the universities should, in a working democracy, be open to those most likely to benefit by the opportunities they offer; and national in that the country cannot afford to lose by default any that should be its intellectual leaders. A recent survey suggested that "about 5% (of the population) are as intelligent as the upper half (of the university students and graduates tested)."[1] It is admitted that intelligence should not be the sole criterion in the choice of undergraduates; nevertheless, this survey does indicate—what is indeed obvious—that many who have been denied it would have repaid the nation well for the chance of a university education.

What is the solution? Most enlightened educators seek to spread the net wider, by affording, irrespective of status, equal chances of competing for places at the university. The education committee of the L.C.C.[2] has declared itself in favour of the American omnibus or "multilateral" system, whereby all post-primary students attend a single school, and are educated according to their capacity, the competent being given ample opportunity of proceeding to college or university. In this, however, there are difficulties, including cost, the scarcity of teachers, and the risk of lowering the standard of school and university training if the doors are opened wide; and to these Sir Cyril Norwood adds: "Unemployed intellectual proletariats have emerged in various countries in the recent past, and they have not made for social health. It is unwise to breed beyond the means of subsistence."[3] Nevertheless, on the reverse of the coin we find[4]: "It is possible, though by no means certain, that we should be a better and happier nation if every crossing sweeper possessed a degree in Lit. Hum. What is more certain is that we shall be fortunate if by 1960 our schools and universities are turning out enough men and women with the qualities needed at all the different levels of employment." In the *Times*[4] Mr. William Connely writes:

> "The difference between the two countries [Britain and the U.S.A.] lies in the stage at which the weeding-out process sets in. In Britain the weeding-out occurs at the age of 11 plus; in America, seriously at the age of 22. Which is the more democratic? Which gives the wider opportunity to 'late developers'? . . . America has six times as many university students as Britain. But the important thing is that America has 100,000 postgraduate students—twice the number of undergraduates in Britain. These American postgraduates it is who eventually run the country."

It may be thought that the American system has much to commend it; but, if only for lack of teachers, it will not be seen here in the measurable future. Surrey County Council makes perhaps the nearest practicable approach in its plan to adopt a common system of secondary education for children of 11–13; on their records in these two years their aptitude for subsequent education at the grammar, technical, or modern school, as the case may be, will be assessed. There is some hope that eventually the examination at 11 or 12, to which most other bodies are adhering, will be replaced by consideration of school records, parents' wishes, and any other factor that the education authorities wish to include; but this must probably wait until a standard system has been accepted throughout the country. There is also hope that the initial division at 11 will not be too rigidly maintained, and that the boy who after entry to, say, a technical school shows exceptional promise may still be transferred to a grammar school from which he could proceed to the university. Any such modifications as these are welcome.

With the best that can be done, selection will still be made before, or in the early years of teen-age. In Britain tradition dies hard; and perhaps tradition in education dies hardest of all. New methods, despite their proved success in other fields, are but slowly acknowledged and still more tardily accepted. Even at the age of 11 or 12, the few who are outstandingly clever should by all means be admitted without demur to a grammar school; but the claims of others who show promise, competing as they are for a restricted number of places, should be scrutinised by every method of known value. In the first place, examination results could be checked by intelligence tests; no single test is a valid indicator, any more than a single examination, but the sum of several tests is a guide whose worth cannot be overlooked. Otherwise, personality, interests, and aptitude should all be taken into account; a headmaster's report would have its value, not so much for any comment on the child's zeal for learning (which may be suitably reflected in his school record and by examination) as for the comment on his behaviour and his relation to other children. The present exclusive preoccupation with examinations in the formative years is not only wrong-headed but harmful; it stands damned for all to see in the youth who, having battled his way through the primary and grammar schools, finally reaches the university with a scholarship, exhausted, his intellectual life spent—an orange sucked dry. Others are injured in less overt fashion; concentration on examinations fosters the regard of learning as simply a means to success in the competition for places, so that when the university is finally attained, what should be a liberal education is seen as a series of coach-classes. "There is another matter," says Sir D'Arcy Thompson, F.R.S., "which makes, to my mind, a greater change since I was young; and that is the way men come to the university, not for the love and joy of learning, but for the business of passing an exam. They do not hitch their wagon to a star as so many of my old companions did; they only want a degree, and a job. In short, we have plenty of undergraduates, but a sad lack of students."[5]

If the universities are not to degenerate into technical colleges, those that come to them must arrive with fresh minds, thinking of education as something larger than a method of winning the struggle for advancement; and the time to impart that vision is when primary education is begun. But such a reorientation is not possible until the teachers themselves have learned that the number of marks in an examination is not what they have held it to be—a satisfactory guide to competence. Nor can the hapless youth whose future may depend on an examination at the age of 11 be assured of a fair chance to show his merit until this lesson has been learned and acted on. We may disagree on methods of teaching and on methods of testing; but none who is interested in the nation's well-being will deny that any step towards a more rational use of our people's intelligence is a step worth the taking.

PSYCHOLOGY OF STUDY

A CORRESPONDENT who signs himself "Ex-Service M.O." writes as follows: "After taking the London degree examinations, one is amazed at the enormous volume of information the student is expected to digest, remember, and reproduce. Many of us who have recently been released from H.M. Forces have our eye on higher examinations, and would be glad to have some information on the technique of study. What is the best method of preparing for an examination with greatest economy of effort, while carrying on a full-time job? Perhaps some of your readers, including the psychologists, would kindly assist us with their advice and experience."

1. *Planning* broadsheet no. 253, issued by P.E.P., 16, Queen Anne's Gate, London, S.W.1.
2. Report of the general subcommittee (no. 5), July 11, 1944.
3. *Times*, August 8.
4. August 14.
5. *Times*, August 9.

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Students Guide

1946 1947

Medical Schools

At OXFORD UNIVERSITY there are staff and accommodation to deal comfortably with some 60–70 students yearly. Hitherto, most prospective students have come straight from school, but Service men and women are already inquiring about places. The faculty is permitted to accept such students outside the quota, but as lack of space and staff set an obvious limitation on numbers the competition for places will be greater than ever, and the faculty is therefore discouraging the acceptance of foreign students for the present.

The general post-war policy of CAMBRIDGE UNIVERSITY is to maintain the preclinical teaching at its previously high level, and to develop a school of clinical research and postgraduate teaching in both specialties and general medicine, rather than attempt to found a complete undergraduate school. This is in accordance with the recommendations of the Goodenough report. Plans for postgraduate work have begun to materialise with the reopening of the department of medicine and with the creation of chairs of experimental medicine and radiotherapeutics. Other special departments which are contemplated include pædiatrics, dermatology, social medicine, and chemotherapy. In all of these special departments there will be opportunities for research students and for those seeking training for long or short periods. In general medicine, the experience gained with ex-Service postgraduate courses has shown the need, for the future, for regular courses for general practitioners of scope and length adapted to their various needs.

An essential part of this organisation has been the creation of a closer liaison between Addenbrooke's Hospital and the university, the first step being the assumption of responsibility by the university for the pathological and biochemical services of the hospital. Other services are expected to come into close association with the university, including the regional laboratory services and a regional scheme for orthopædic and thoracic surgery and for neurosurgery. All of these plans are designed to make the university the focus of medical research and teaching for the East Anglian Region.

London Schools

LONDON UNIVERSITY bears a different relation to its medical faculty from other universities: where they have one school of medicine each, London has the twelve autonomous schools of the teaching hospitals, as well as University, King's, and Queen Mary Colleges, all of which take medical students for some part of the course. In addition, external students of the university may take their clinical training at the West London Hospital, which is not a university school. The course has now been restored to its pre-war length. Candidates who passed the second examination for medical degrees on or after March, 1945, must now take a clinical course lasting not less than 30 months before entry to part I of the M.B., B.S. examination, and not less than 36 months before entry to parts II and III. The additional final examination which has been held in January or February in the last four years has been given up, and will not be held in 1947 or after. Both the first and second M.B. examinations can now be conducted internally. That is to say, students are now examined in their own schools, working at the benches and with the equipment with which they are familiar, like the students of other universities. The examinations are conducted by an internal and an external examiner; and the man who knows the daily work of the students can help to correct the impression made by a normally good student who is having a bad day with the apparatus and showing to poor advantage. The external examiner's opinion has, if anything, more weight, however; so there is no fear that favouritism might bias the issue. The effect is merely to give the student the best possible chance of doing himself justice.

The students of UNIVERSITY COLLEGE have now been back in their own buildings at Gower Street for over a year, but work is still seriously hampered by lack of space; for Government departments, despite continued protests, continue to occupy most of the useful territory of the school. Candidates for entry exceed the number of vacancies; places are particularly scarce in the first year, where the faculty of science must consider the requirements not only of medical students but of those doing pure science, dentistry, and several other subjects. The number of medical students could be increased only by crowding out some of these classes, all of which are essential. Hardly any young people coming direct from school will get places in the first year, since almost all the vacancies must be reserved for ex-Servicemen.

KING'S COLLEGE is one of the largest schools for medical studies in London, supplying students to four hospitals—King's College Hospital, Charing Cross, St. George's, and Westminster. Arrangements are made by which patients attend the college for clinical demonstrations in applied physiology, by clinicians. The scientific departments fortunately escaped serious damage from bombing, and repairs are now completed. The students hostel was reopened in October, 1945.

QUEEN MARY COLLEGE, now returned to London from Cambridge, has established once more its close contact with the London Hospital Medical College, and a joint committee composed of members of the governing bodies of the two colleges has been set up, as well as a teaching subcommittee, to coördinate 1st M.B. teaching. The numbers of medical students passing through the college during the session 1945–46 are 48 for the 1st M.B. and 24 for the premedical examination. A number of ex-Servicemen have joined the medical classes. All internal students now take the special internal 1st M.B. examination in July.

Post-war reablement is beginning to make some progress at UNIVERSITY COLLEGE HOSPITAL medical school. The many gaps in the ranks of its teachers caused by retirements are rapidly being filled, and the departments are beginning to resume their old activities. Expansion is inevitable, and space in which to expand is the constant demand of every chief. Sites and building permits are being eagerly sought and laboratory equipment is being tracked down. Modifications of traditional methods of teaching are being tried cautiously, with the object of achieving a more logical approach to the study of medicine. Teachers are keenly interested in the unpredictable effects of the proposed new health service on the quality of the students presenting themselves for medical training, and feel more firmly convinced than ever that it is essential to take the utmost pains to choose those who are likely to turn their training to the best account.

ST. BARTHOLOMEW'S HOSPITAL Medical College has now returned to London. The preclinical departments started work in their own college buildings, which have undergone temporary repairs, in April, 1946. The clinical school is partly restored to normal with a new clinical theatre, and the library and museum are again in use. In addition to the hospital in London, St. Bartholomew's is responsible for between 500 and 700 beds at Hill End Hospital, St. Albans. Six months in the last year of the clinical course is spent there on work in medicine, surgery, and gynæcology. Many of the gaps in both the preclinical and clinical staff which occurred during the war have been filled. The clinical curriculum has been lengthened from the two and a half years of war-time to a full three years, and the time students spend in the special departments has been materially increased. Although repairs to the damaged buildings are only temporary, accommodation is adequate. The new refectory in the college has exceeded original expectations, and it is hoped that permanent rebuilding of the college will soon be begun, and that the hospital will shortly acquire premises to be used as a students' hostel.

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At CHARING CROSS HOSPITAL plans are complete for restoring war damage and for receiving women students. To relieve the bottle-neck of the preclinical years it has been decided to return to the school's original practice, and to teach anatomy and physiology on the spot, instead of sharing the opportunities offered at King's College. A new story to house these departments is to be built on the top of the present medical school, and will be in action, it is hoped, by October, 1947. These quarters, however, are merely temporary, for Charing Cross, following the Goodenough recommendations, plans to rebuild on an outlying site, near Harrow. A plan has been drawn up with the Middlesex County Council to provide, subject to the provisions of the new Health Bill, a teaching centre and a medical service for the area. The planning committees have striven to eliminate the spirit of competition from this combined voluntary and municipal scheme and to devise a truly coöperative centre of teaching and treatment. The new Charing Cross will be associated with a group of general and special hospitals, including the Central Middlesex and Redhill County Hospitals, the Hillingdon County Hospital, Shenley Hospital for Mental Diseases, Willesden and Hendon Fever Hospitals, Harefield for tuberculosis, and Mount Vernon for radiotherapy. The new centre will therefore serve the greater part of North-west and West Middlesex, with a population of a little over a million. The medical school will be incorporated, and have its own governing body; it is planned to admit a maximum of 100 medical and 50 dental students of both sexes yearly. All teachers will share equally the advantages and obligations of their position and the chances of academic promotion, whether employed by the voluntary or the municipal body. The new Charing Cross will take 100 chronic sick, and will have 300 beds for the admission, without selection, of patients in need of treatment in the area. There will also be 100 maternity beds, 250 beds for general and 86 for special surgery, 20 casualty beds, 210 general medical beds, 100 children's beds, and 114 beds in the special departments. An acute psychiatric unit of 40 beds has also been planned to work in conjunction with the county mental service, and a chest clinic, with 30 beds for tuberculous cases. This is by far the most constructive plan for collaboration between a voluntary hospital and a municipal service so far put forward; it deserves great success.

At ST. GEORGE'S HOSPITAL the tradition is to teach a relatively small number of clinical students in an intimate and individual atmosphere. It is the aim to preserve the spirit of this tradition in the hospital and a medical school of much greater size and scope which is to be built on a new site. In the interim before the move the staffs of both school and hospital are being augmented—a process bringing particular advantage to the present students whose numbers will remain the same until the clinical resources have grown greater. In the coming year the total number of beds at Hyde Park Corner will be increased by thirty for maternity cases. Neurosurgery, medical neurology, and psychiatry will be taught both there and at the Atkinson Morley branch; and pædiatrics at Hyde Park Corner and in the Victoria Hospital for Children, Tite Street, which is conveniently near. Fevers will then be the only clinical subject studied outside the parent hospital and its associates. This year the school will again accept a limited number of women students for clinical studies.

GUY'S HOSPITAL is now back on a pre-war basis, with the exception of those portions which were destroyed by enemy action. All the senior members of the staff have returned from the Forces, and with very few exceptions the junior staff are also back. The medical wards are in use again, and all those surgical wards which were not structurally damaged have been reopened. Beds are still retained at Orpington for the special departments (orthopædics, genito-urinary, and E.N.T.). The preclinical school has been working to capacity during the year, and the majority of the entries for the coming year are ex-Servicemen. Applications for admission this year have been extremely heavy but are limited by the accommodation available.

KING'S COLLEGE HOSPITAL medical school has now returned to Denmark Hill, except for the special departments of medicine and surgery, which are continuing at Horton Emergency Hospital, Epsom. Tuition in elementary medicine and surgery, pathology, midwifery and gynæcology, and medical clerkships and surgical dresserships, as well as outpatient instruction in all departments, is being carried on at King's College Hospital. At Horton Emergency Hospital, where nearly 1000 beds are available, inpatient teaching on special subjects, including medical and surgical diseases of the chest, is available during the latter half of the second clinical year. The teaching of industrial medicine includes a course of lectures by the medical officer of a large factory, and also a visit to a factory. In the last clinical year tutorial classes are taken by tutors in the various branches of medicine.

At the LONDON HOSPITAL the number of entrants slightly exceeds the pre-war figure, and the size of the school now is thought to be optimal. There is a keen demand for entry among ex-Servicemen; unlike schoolboy entrants, few of these have passed their first M.B. examination, and the heavy demand for instruction in the first-year subjects may delay the start for some. The hospital, like others, has plans for rebuilding: both the medical school and the hospital, which is to be of about 1000 beds, are to be reconstructed on a nearby site, but it is not yet possible to say when the work can be started. During the coming year the hospital will be maintaining 600 beds at Whitechapel and 300 beds at the annexe at Brentwood—in fact, more beds than used to be maintained before the war. Both the parent hospital and the annexe will be used for teaching. All the staff have now returned, and a number of new appointments have been made recently. A department for medical diseases of the chest has been started, and will work in close conjunction with the department of thoracic surgery. The neurosurgical unit has returned from Chase Farm Emergency Hospital, and is being maintained partly at the London Hospital and partly at the annexe. Arrangements have been made for all students to live at the Eastern Fever Hospital for part of their course in fevers. They continue to visit Claybury Hospital for instruction in mental diseases. A professor has been appointed to the chair of medicine, which has been vacant for some time, and the medical unit has been reconstituted. Professorships of surgery and obstetrics are under consideration. In October there will be six general medical firms, one of which will work in conjunction with the cardiac department, and two others in conjunction with the neurological department. The thoracic surgery and neurosurgery, skins, physical medicine, and psychiatric beds are attached to general medical firms for the purpose of teaching.

At ST. MARY'S HOSPITAL the teaching staff has been considerably increased, partly by the return of members who were in the Services and partly by new appointments. The preclinical and clinical departments have thus been able to overcome most of the difficulties of the war years. Some improvements have been made to the laboratories and to the library; more will be done to the medical school buildings in general as soon as the labour situation eases. All clinical students have now returned from the sector hospitals and receive the whole of their instruction at the parent hospital. The demand for entry in the coming session has been very great, and 90% of the vacancies have been filled from the Services and other priority classes.

MIDDLESEX HOSPITAL students now do their clinical training entirely at the parent hospital, except for a few who still attend the Mount Vernon Hospital, Northwood, and the Central Middlesex Hospital. The arrangement for teaching at outlying hospitals has worked well, except that students have been a little hampered by being out of touch with their own library and museum. A number of new appointments have been made to the teaching staff, particularly in the junior grades. It is hoped that war damage will have been repaired, and the hospital completely reopened, in 6–9 months. The system of resident instruction in infectious diseases, recommended by the Goodenough Committee, has now been adopted, thanks to the coöperation of the L.C.C. The students feel that this way they get better instruction, and certainly the results hitherto have been encouraging.

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During the past session the LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN has been full, and owing to the continued competition for the 100 vacancies available each year, an entrance examination was again held in January to select the successful candidates for admission in October; 500 applicants entered for this examination. Repairs to the extensive damage to the school buildings, caused by a rocket bomb in February, 1945, have been carried on throughout the session. It is hoped that these will be completed by Oct. 1, and that all the work of the school will be carried on in its own buildings from that date. During the past session the physiology and organic chemistry departments have continued to enjoy the kind hospitality extended to them by Guy's Hospital medical school. The school buildings are overcrowded, but until repairs are completed it is impossible for any of the much-needed extensions to be carried out. Facilities for the teaching of the clinical students have been increased by the reopening of more wards at the Royal Free Hospital, and by the allocation of a portion of the London Fever Hospital, Liverpool Road, to the Royal Free, for use as an annexe. The opportunities for teaching at the Elizabeth Garrett Anderson Hospital, which the school has enjoyed for many years, have been greatly extended, and arrangements are being made to incorporate this hospital among the school's teaching hospitals.

ST. THOMAS'S HOSPITAL medical school is again concentrated in its old home in London, on the south bank of the Thames opposite the Houses of Parliament. Students, however, still spend one year of their training at St. Thomas's Hospital, Hydestile, near Godalming, doing inpatient clerking and dressing. There is every hope in the near future that sufficient beds will be open in London to enable the whole course of training to take place there. The library is well stocked with modern textbooks and periodicals, and under its librarian plays an important part in school life. The museum will soon be open again, while the students' club, with its excellent dining-room and lounge, is available; other amenities are rising from the ruins of war. In teaching, strong emphasis is laid on the correlation of preclinical work with subsequent clinical training, and by the time he has completed his second M.B. every student can use the stethoscope, ophthalmoscope, and auriscope. The medical and surgical units are awaiting the appointments of new professors, while the pathological department is expanding, and a chair of bacteriology is being established. Close liaison is maintained with local L.C.C. hospitals, and Pyrford Orthopædic Hospital is used for teaching. Like other hospitals, St. Thomas's is accepting 15% of women among new entrants, but hopes later to increase the annual entry to 20%.

The WEST LONDON HOSPITAL continues to train women students who have completed their preclinical course. This year the entrants will number about 30, which is the largest intake possible under present conditions. A number of new junior teaching appointments have been announced, and the nearby Fulham L.C.C. hospital—where the dean of the school has been appointed to charge of beds—is being increasingly used for clinical instruction. The future status of the hospital as an undergraduate teaching school is still under consideration.

WESTMINSTER HOSPITAL again has all its clinical students under one roof and in the past year has developed many of the plans made during the war for expansion and improvement. Arrangements are already being made to affiliate the hospital with other hospitals in the neighbourhood, and a professorial unit in clinical pathology, staffed and equipped to serve the whole group, has been established. The photographic department has been considerably strengthened, and a flourishing visual education unit has already developed. The Emergency Medical Service still has possession of some beds in the hospital, which makes it difficult to meet the urgent demand for postgraduate instruction; but courses have been arranged for regular officers of the Royal Army Medical Corps, and many old Westminster students released from the Forces have attended the practice of the hospital. It is hoped, moreover, that a number of beds at present used by nursing and domestic staff will shortly be released, for the Empire Nursing Home, in Vincent Square, has been purchased and is being prepared for their occupation. A hostel for students within easy reach of the hospital has been acquired and is already well filled. The clubs of the students' union are extremely active and many athletic and social functions interrupted by war have now been resumed.

The SCHOOL OF DENTISTRY of the ROYAL DENTAL HOSPITAL of London admits students who have passed their science examination in zoology, botany, physics, and chemistry. They take courses in dental mechanics, metallurgy, and special anatomy for the first two years, and during this time they also study general anatomy and physiology. The anatomy and physiology courses are held at King's College in the Strand. For general medicine and surgery the students attend clinics at Charing Cross Hospital. There are also dental schools at Guy's, University College Hospital, King's College Hospital, and the London, but the other London medical schools offer no organised teaching for dental students; medical students of those schools, however, who wished to study dentistry could, of course, be credited with the general courses they had taken there.

Other English Schools

The UNIVERSITY OF DURHAM has restored its curriculum to the normal length with effect from the commencement of the academic year 1946–47. At the same time, new regulations for the final M.B., B.S. examination will become operative, and the first examination under the new regulations will be held in December, 1946. Under these regulations surgery and midwifery will form part I of the examination, and medicine and pædiatrics part II. It will be possible for students to present themselves for part I six months before they take part II. The demand for entry to the medical school remains, as elsewhere, very high and is accentuated by the large number of ex-Service applicants. The last year has seen the foundation of a department of surgery, under a whole-time professor, and the appointment of the Nuffield professor of industrial health. Senate has recently agreed in principle to the appointment of a whole-time professor of mental health and a whole-time reader in anæsthetics. These departments are likely to be established shortly.

With the return of many members of the staff from overseas the medical school of BIRMINGHAM UNIVERSITY * is gradually returning to normal. Important new research schemes are being developed and teams are being built up for this purpose. It is hoped to announce in the near future appointments to the full-time chairs of medicine, surgery, midwifery, and pædiatrics. No outstanding changes have been made in the curriculum, but like other schools Birmingham will shortly be considering the suggestions made in the Goodenough report and the draft recommendations of the General Medical Council regarding professional education and examinations. The public health courses for the C.P.H. and D.P.H. will be resumed in October, 1946.

At LIVERPOOL UNIVERSITY,* where teaching of medicine dates back to 1789, there are today 16 professorial chairs and 585 students. The premedical course is taken in the faculty of science, and the preclinical course and clinical lectures in the medical school block, in the university quadrangle. The Royal Infirmary, where some of the clinical work is done, backs on to the university medical buildings. The damage done by bombs is now well on the way to repair; and new quarters are being provided for research laboratories and as offices for the department of surgery. The university has lately appointed whole-time professors in the clinical departments of surgery, and of obstetrics and gynæcology, and is preparing to appoint a professor of neurosurgery in the newly founded department of neurology. The department of child health,

* The entrance requirements for the Universities of Manchester, Liverpool, Leeds, Sheffield, and Birmingham are laid down in the pamphlet *Qualifications for Entry upon a Degree Course*, copies of which may be obtained from the Secretary to the Board, 315, Oxford Road, Manchester, 13. War Emergency Regulations are also in operation but will be withdrawn on Dec. 1, 1947. Any candidate satisfying those regulations before that date will be qualified to enter upon a degree course at any time. Additional faculty requirements may, however, be imposed; details can be obtained from the dean of the faculty of medicine in each university.

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directed by a professor, was established during the war, and operates in both the voluntary and municipal children's hospitals. Clinical instruction in general medicine and surgery is given in the Liverpool United Hospital, which includes the Royal Infirmary, and in the major municipal general hospitals. Specialties are taught in the appropriate special hospitals, whether voluntary or municipal. As in other universities, various entrance scholarships are available details of which may be had from the Academic Department of the university. Halls of residence are provided for the students. The course has been restored to the full six years, of which at least three (and two at least after the first examination) must be spent in the university; the other three years may be spent in any recognised university or medical school. The university grants four higher medical degrees: doctor of medicine, master of surgery, master of orthopædic surgery, and master of radiology. The M.D. is granted on a thesis and an oral examination. The university also offers courses and examinations for diplomas in public health, and in tropical medicine and hygiene. Postgraduate fellowships and studentships are awarded on application to selected candidates for 1–3 years' research in all the principal departments of the medical school.

At MANCHESTER UNIVERSITY * a full-time chair of medicine has just been established, and a chair in association with the new department of industrial medicine was established last October. The war-time concession by which candidates were allowed to take the final M.B. examination after 30 months' clinical work is to be withdrawn, and the customary 36 months' work will be required after December, 1946. The courses for the diploma in public health have already been resumed, and it is hoped to renew the courses for the D.P.M. in October, and for the diploma in bacteriology some time next year. The university has taken the useful step of providing a certificate for psychiatric social workers, and the first course will be given this autumn.

In the past year no noteworthy changes have been introduced into the medical course at the UNIVERSITY OF LEEDS,* as adoption of the revised curriculum, outlined in the university's report on post-war planning, has been deferred until the General Medical Council's new recommendations on medical education have been considered. Meanwhile, the administration of the medical school has been strengthened by a new post—that of senior administrative officer. The newly created full-time chairs in medicine, psychiatry, and pædiatrics have been filled, and new chairs have also been instituted in chemical pathology, biochemistry, and pharmacology. Full-time chairs in surgery and in obstetrics and gynæcology are under consideration. New regulations, based on the recommendations of the G.M.C., have been approved for the diploma in public health, and a syllabus has been prepared for a course starting in September. Resumption of the course for the diploma in psychological medicine is being considered, but will not be possible next session. The midwife teachers' certificate course will begin again in October. Honours schools for the degree of B.SC. in anatomy, physiology, biochemistry, pharmacology, and bacteriology have been re-opened for approved medical students, and the course for the ordinary B.SC. degree in physiology has been planned afresh to allow candidates in the third year the option of reading either comparative physiology, work physiology, or nutrition and dietetics. Students preparing to take the diploma in dietetics, awarded by the General Infirmary at Leeds, will either take an approved course in domestic science and attend the diploma course for two years, or take a B.SC. in chemistry and physiology with an additional year of practical instruction at a hospital. The Government's delay in announcing their decision to fill up to 90% of the places with ex-Servicemen has immeasurably increased the difficulty of dealing with applicants for admission to the medical course next session. The pressure, already severe, on laboratory accommodation in physics and chemistry will be greatly intensified by the admission of large numbers of ex-Service people, while of applicants from school only those of exceptional promise, whether men or women, are likely to be admitted in the next two sessions.

At SHEFFIELD UNIVERSITY * the normal curriculum has been restored, and all teachers have returned from National Service; but deaths, retirements, and the institution of full-time clinical departments have necessitated many changes in staff. To cope with the increase in administrative work, a full-time Dean of Medicine will have to be appointed. As usual, the number of prospective students far exceeds the accommodation available, and the problem of duplicating classes must be faced if additional staff can be found. Numerous applications are being received from ex-Servicemen. Plans are being prepared and sites have been bought for building a new medical school and a new teaching hospital, but building restrictions prevent further progress at the moment. Recent new developments have been the establishment of departments of plastic and thoracic surgery. Revision of the curriculum in the light of the Goodenough report will be undertaken as soon as the new recommendations of the General Medical Council on medical education are known.

Since last year the clinical curriculum at BRISTOL UNIVERSITY has been restored to its normal length. A few ex-Servicemen were admitted to the medical school last October, and during the session some of the students who voluntarily broke off their studies in order to volunteer for the Forces have returned. Applications from ex-Service men and women for next October are very numerous, and the accommodation will be taxed to the utmost. Additional buildings of a temporary nature have been planned and will be erected as soon as possible in order to prevent "bottle-neck" departments from being the chief factor limiting student admissions. Considerable increases in staff are also being made to meet the programme of reconstruction of the medical school. During this session the university has appointed its first full-time professor of surgery. Refresher courses have been provided for ex-Service medical officers, and new postgraduate courses for specialist qualifications have been designed. The university now proposes to grant again its diploma of public health, which has been in abeyance for some years, and has also instituted new diplomas in medical radiology and in psychological medicine. Courses for these diplomas will probably be introduced next session. An Edgeworth Prize in physiology has been founded from a bequest made by the late Miss E. E. Edgeworth, sister of a previous professor of medicine.

Wales

THE WELSH NATIONAL SCHOOL OF MEDICINE continues to teach students mainly for the degree of M.B., B.CH. (Wales). For admission to this degree, candidates must normally hold a degree in arts or science requiring three years' residence in University College, Cardiff, before entering the school. During the war, however, and up to the present, this requirement has been suspended for students entering the college who have gained exemption from the premedical courses and examinations. The number of students admitted is governed by the available accommodation both in the college and the school, and is normally between 40 and 50. Any loss during the preclinical years is made up by the admission of students from other universities who are studying for qualifications granted by other licensing bodies. For the forthcoming session the University of Wales, like others, is required by Government decision to give absolute priority to ex-Service applicants who are academically qualified for admission, and it is anticipated that few students, male or female, will be admitted direct from schools. The school is administering for the Ministry of Health the scheme for postgraduate training of demobilised medical officers. The placing of class I officers in hospitals creates a little difficulty in finding resident posts for recent graduates, but an effort has been made to retain a sufficient number of vacancies for them. It is anticipated that this difficulty will not last long, and will not affect those now entering upon their studies. In addition to special courses for ex-Servicemen and other graduates, courses for the certificate of public health (C.P.H.) and the D.P.H. (Wales), under the new rules of the General Medical Council, are being conducted, and those for the T.D.D. (Wales) in tuberculosis are being resumed.

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Scotland

ABERDEEN UNIVERSITY has seen a busy and interesting year. The members of the staff returned from service settled quickly to their old duties, and demobilised young graduates have shown a refreshing eagerness to get down to the task of equipping themselves for their life's work. There is increased activity in all branches of university work. An appointment has been made to the chair of mental health, and clinical teaching of this important subject has been begun in the general hospital. A chair of child health is to be established. New lectureships have been advertised in nearly all departments and some of them have been filled, but there seems to be a dearth of suitable candidates for posts in the medical sciences—the result, no doubt, of the long period when young doctors had to go into the Services instead of being trained for this work. It will take several years to fill this unfortunate though inevitable gap. A full-time post has been established, the holder of which will be in medical charge of all students whose homes are not in Aberdeen and of the nurses in the main teaching hospital. He will be expected to devote considerable attention to that aspect of social medicine which is concerned with the influence of environmental conditions on mental and physical health. Periodic medical examination is now compulsory for all students entering the medical faculty, and optional for the others. Plans have been prepared to extend the hall of residence to accommodate 100 students, and it is hoped that the necessary authority to build will not be too long delayed; for, as in other Scottish University towns, the lodging problem is becoming one of great difficulty, especially during the summer months, and the importance of communal life as an integral part of the education of students is becoming more widely recognised.

At EDINBURGH UNIVERSITY there have been no important alterations in the medical curriculum, though details of courses are constantly under review. The General Medical Council have not yet issued their recommendations on the curriculum and the professional examinations, on which a general revision of the course will have to be based. The number of applicants for the M.B. degree course beginning next October is expected to reach 1200–1300, and the Government decision that ex-Service applicants must be given preference, if necessary to the extent of 90% of total admissions, must of course lead to the rejection of larger numbers of young people from the schools than has ever been the case before. Courses for the diploma in public health were resumed last January, and all places for the second course, which begins in October, are already filled. It has not yet been finally decided to divide the course for the diploma in medical radiology into two sections—radiodiagnosis and radiotherapy—but it is hoped to introduce separate courses in the two branches next October. Many applications have been received for this course but it is unlikely that more than 12 candidates will be accepted. Courses for the diploma in tropical medicine and hygiene were resumed last January. Courses for the diploma in psychiatry are still in abeyance: completely new regulations are under consideration. The university is considering the institution of a diploma in industrial health.

SURGEONS HALL, the school of medicine of the Royal Colleges of Edinburgh, is a teaching body only, and holds no professional examinations of its own; it offers courses for the qualifying examinations of the Scottish, English, and Irish Conjoint Boards. The school is not a part of the university.

The faculty of medicine in the UNIVERSITY OF GLASGOW is now working almost normally. All the departments in the university and the associated hospitals are operating, and the teaching staff has almost regained full strength. The faculty admits 180 students annually to first-year medicine, and a small number of exceptional cases to the later years of the course. Selected candidates are interviewed, usually in July, but special arrangements have had to be made this year for ex-Service candidates. Women students are admitted on equal terms with men; and owing to the relatively larger number of women applicants, the educational standard of women admitted is very high. The curriculum at present extends over five years, but it is likely that a six years' curriculum, which was about to be introduced in 1939, will soon be brought into force, having first been reviewed in the light of official recommendations. The war-time arrangement of examinations, under which students have been able to graduate in a minimum period of four years and nine months, is being continued for the present. Four large general hospitals are associated with the university for clinical teaching in medicine and surgery. Obstetrics and gynæcology are taught mainly in the Royal Maternity Hospital, and pædiatrics in the Royal Hospital for Sick Children. The special subjects are taught in the appropriate departments of the numerous hospitals in the area. A large amount of postgraduate teaching is also undertaken, and it is intended to enlarge this field. Medical students join in the full life of the university, associating freely with students in other faculties. There are two large halls of residence for men students and two smaller halls for women students, and lists of private lodgings are kept by the Students' Representative Council. The Students' Unions occupy separate buildings within the university precincts. All students become members of the University Athletic Club on matriculation, and there is a Senior Training Corps, an Air Squadron, and a University Naval Division.

About 20 bursaries in medicine are available each year, and various additional bursaries, prizes, and scholarships are awarded to the best students in the faculty.

The extramural schools at Glasgow, ANDERSON COLLEGE and ST. MUNGO'S COLLEGE, offer courses in preparation for the examinations of the licensing boards and the universities.

Every final-year student of the UNIVERSITY OF ST. ANDREWS graduating in June, 1946, has held a resident hospital post. In future, owing to the claims for further instruction of medical officers returned from H.M. Forces, this may not be possible. The hospitals which applied for these clinical clerks have been favourably impressed with their work, as shown by reports from hospital authorities. The university has now reverted to its peace-time pattern in its examinations, the final examination being taken after 33 months of clinical study. Arrangements are being made to resume the course for the diploma in public health, but unless an appropriate whole-time lecturer can be found there may be some delay.

Ireland

The School of Physic of TRINITY COLLEGE, DUBLIN, in common with other medical schools, has been besieged by applicants for admission. Ex-members of the school returning from the Armed Forces are receiving priority, and it is proposed to allocate the limited number of places remaining to internal students who intend to take the entire premedical and medical curriculum in the school. Only those who have passed a recognised examination in the subjects required for matriculation to the university can be considered, as all candidates for the medical degrees are required to take the course and examinations for the B.A. degree in addition to the medical curriculum. Except in the case of local applicants, places in the school are allocated each April for the following October. Active consideration is now being given to the problems of reviving teaching for the diploma in public health and it is hoped that it may soon be possible to resume instruction for this diploma.

The conditions under which the diplomas in gynæcology and obstetrics and in psychological medicine are being awarded have been slightly modified.

The SCHOOLS OF SURGERY, Dublin, including Carmichael and Ledwich Schools, are attached by charter to the Royal College of Surgeons in Ireland. Students are admitted by competition in the preliminary examination, and the schools accept women as well as men. The preclinical study of physiology now includes special practical classes in which students, working on each other, are taught the use of instruments and methods used in the examination of the peripheral neuromuscular, cardiovascular, respiratory, digestive, and central nervous systems, of the skin, eye, and ear, and of the effects of exercise. An electrocardiograph and a small X-ray screening apparatus are among the equipment used. At the operative surgery class a course in the practical use of splints, plaster, and bandages has been included.

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At QUEEN'S UNIVERSITY, Belfast, during the war, despite the absence of many of the staff with the Services, it was possible to maintain a full course of study. The number of students entering was limited, in 1939, to 112—the average number for the preceding three years—but has been raised to 130 this year as a concession to ex-Servicemen. Last year the Government grant to the university was extended, which made it possible to increase the staff, and to create additional registrarships in all the clinical subjects, as well as to strengthen the preclinical departments. The length of the course, shortened to five and a half years during the war, now reverts to six years. The diploma in psychological medicine is available for anyone holding the appropriate qualifications who wishes to sit for the examination. Courses for the diploma in public health are being resumed this year but will be confined to ex-Service candidates who are graduates of the university; not more than thirty can be accepted. The chairs of surgery and public health are now being made full-time appointments. As soon as materials become available the preclinical buildings are to be extended and the clinical departments rebuilt.

The NATIONAL UNIVERSITY OF IRELAND has colleges in Dublin, Cork, and Galway.

At UNIVERSITY COLLEGE, Dublin, the courses for the diploma in public health, interrupted during the war, were resumed last October. Courses have also been instituted for the diploma in child health of the university. It has never been the practice to hold courses at this college for the diploma in psychiatry.

At UNIVERSITY COLLEGE, Cork, the curriculum has been discussed thoroughly, and in October, 1944, a special committee was appointed to consider changes. A general attempt has been made, without shortening courses, to prune away unnecessary detail, unprofitable practical work, and needless burdens on the student's memory. The college has 16 mm. sound equipment for films, and it is hoped that "if used in moderation it will be a useful weapon." The voluntary and municipal hospitals of the city have agreed to make all appointments of newly qualified men in collaboration with the medical faculty of the college. In future the emphasis is to be on clinical rather than laboratory medicine, and in order to ensure that each student has adequate clinical experience numbers have been limited, and only those who complete their first and second examinations within four years will be permitted to proceed with the course.

At UNIVERSITY COLLEGE, Galway, there have been no changes in the medical course or the regulations governing degrees in the past year.

Degrees and Diplomas

EXAMINING BOARDS

English, Scottish, and Irish Conjoint Boards

THE Examining Board in England of the Royal College of Physicians of London and the Royal College of Surgeons of England examines candidates for the qualifying diplomas of M.R.C.S., L.R.C.P. Candidates satisfying the board's regulations in regard to the preliminary examination in general education are eligible for admission to the premedical examination in chemistry, physics, and biology, and are required to complete the professional curriculum subsequently at a recognised medical school. The emergency regulations introduced as a war measure will hold until further notice. Under these, the medical course has been reduced from 57 to 54 months, and candidates are admissible to the last subject of the final examination after 30 months of clinical study instead of 33. The regulation permitting a candidate to enter for one part of the final after 24 months of clinical study still holds. Some other war-time concessions are still authorised in the regulations: for example, clinical study may be undertaken at any hospital provided the dean of the candidate's school is satisfied as to the instruction available and signs the certificate of study. Other modifications will be found in the Emergency Regulations, copies of which, with a calendar showing the dates of examinations, may be obtained, free of charge, from the secretary to the Examining Board in England, the Examination Hall, Queen Square, London, W.C.1.

The Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow have an arrangement by which, after one series of examinations, held in Edinburgh or Glasgow, or both, the student may obtain the diplomas—designated by the letters L.R.C.P.E., L.R.C.S.E., L.R.F.P.S.G.—of all three bodies. Candidates may work for the examination of the Scottish Conjoint Board at any of the recognised medical schools of Great Britain and Ireland. In 1938 the Triple Qualification committee of management adopted the suggestions of the General Medical Council for an extended medical curriculum, under which the course was to consist of a year of premedical work followed by a five-year medical course; but the committee reverted to the 1937 regulations as a temporary war measure. Under these the course lasts only five years and includes, in addition to the pre-registration examination, four professional examinations: the premedical examination (biology, chemistry, and physics); the second examination in anatomy and embryology, physiology, biochemistry, and biophysics; the third in pathology and bacteriology and pharmacology; and the final in medicine, surgery, midwifery, forensic medicine, and public health. Details may be had from the registrar, 18, Nicolson Street, Edinburgh.

The Conjoint Board of the Royal College of Physicians of Ireland and Royal College of Surgeons in Ireland accept candidates for the L.R.C.P.I. and L.M., L.R.C.S.I. and L.M. from most of the recognised medical schools at home and abroad. Full details of the regulations can be obtained from the registrar, Royal College of Surgeons in Ireland, Dublin.

Apothecaries' Licences

The Society of Apothecaries of London grants the L.M.S.S.A. Lond. to candidates who pass in the primary examination (which is held quarterly) and the final examination. Final examinations are held monthly, except in September. The minimum period of study is normally five years. The four parts of the final examination may be taken together or in any order. Regulations and schedule of the required courses of study may be obtained from the registrar, Apothecaries' Hall, Black Friars Lane, E.C.4.

The Apothecaries' Hall of Ireland grants the diploma L.A.H. Dubl. to students who have passed the three professional examinations. The diploma confers on holders the right of registration on the Medical Registers of Ireland and Great Britain. Examinations are held three times yearly, in March, June, and November. Further information may be had from the registrar, 95, Merrion Square, Dublin.

UNIVERSITY DEGREES

Bachelor of Medicine and Surgery

All the universities in the United Kingdom offer baccalaureate degrees in medicine and surgery, conferred on the results of examination.

HIGHER QUALIFICATIONS

Those who have graduated in medicine and surgery are at liberty to seek higher qualifications if they wish.

Doctor of Medicine and Master of Surgery

Graduates holding a bachelor's degrees can take the degree of Doctor of Medicine or Master of Surgery. All the universities in Great Britain and Ireland confer such degrees. The requirements vary and can be obtained from the different universities. At the University of Durham the degree of Doctor of Surgery (D.CH.) is offered in addition to degree of Master of Surgery (M.S.). Liverpool offers the orthopædic degree of M.CH. ORTH.

Master in the Science of Obstetrics and Master of Midwifery

The Irish universities grant the degree M.A.O. The Society of Apothecaries of London grants the Mastery of Midwifery (M.M.S.A.) upon examination in obstetrics, pædiatrics, and public health. The examinations are

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held in May and November, and regulations may be obtained from the registrar, Apothecaries' Hall, Black Friars Lane, E.C.4.

MEMBERSHIP AND FELLOWSHIP

The Royal College of Physicians of London confers the Membership (M.R.C.P.), which is obtained by examination. Examinations are held four times in each year, and medical graduates and licentiates of the college over twenty-three years of age may sit for it. Details can be obtained from the secretary, Royal College of Physicians, Pall Mall East, London, S.W.1. Fellows of the college are elected annually at a general meeting of the college.

The Royal College of Surgeons of England grants a Fellowship to those passing the primary and final F.R.C.S. examinations. Under the regulations which became effective from the end of 1943 undergraduates are not permitted to take the primary examination, which is open to those who hold a qualification registrable in the British Medical Register and graduates in medicine and surgery of universities and medical colleges recognised by the council. Subjects of the primary examination are anatomy (including normal histology), applied physiology, and the principles of pathology. To be admitted to the final examination candidates must produce evidence of having been engaged in acquiring professional knowledge for not less than 2 years after taking a recognised medical qualification. Dates of examination have been rearranged so that candidates who pass the primary examination can proceed at once to the final if they are eligible. Copies of the new regulations and full particulars may be obtained from the director of examinations, the Examination Hall, Queen Square, London, W.C.1.

Medical graduates who have been registered, or eligible for registration, for at least three years may apply for examination for Membership of the Royal College of Obstetricians and Gynæcologists (M.R.C.O.G.). Particulars of the regulations may be obtained from the secretary, Royal College of Obstetricians and Gynæcologists, 58, Queen Anne Street, London, W.1.

The Fellowship (F.R.C.O.G.) is granted to Members who are judged by the Council to have advanced the science and art of obstetrics and gynæcology.

Graduates may become Members of the Royal College of Physicians of Edinburgh (M.R.C.P.E.) on passing an examination, particulars of which may be obtained from the secretary, 9, Queen Street, Edinburgh, 2.

The Fellows are selected from among the Members by the council of the college, and receive the designation F.R.C.P.E.

Fellowship of the Royal College of Surgeons of Edinburgh (F.R.C.S.E.) is granted to medical graduates who pass the required examination; particulars of the regulations may be obtained from the clerk of the college, Surgeons' Hall, 18, Nicolson Street, Edinburgh.

The Royal Faculty of Physicians and Surgeons of Glasgow grants, after examination, a Fellowship registrable by the G.M.C. as an additional qualification (F.R.F.P.S.G.). Admission is by examination and subsequent election. The candidate, who must be a licentiate of the faculty or a graduate in medicine of a university or medical college approved by the faculty, may be examined either in medicine or surgery. A candidate having practised a specialty for at least 7 years may be examined in that special subject if the council of the faculty approves. A candidate may also submit original published work, and if this is of sufficient merit he may be excused part of the examination. Details may be had from the secretary of the Royal Faculty of Physicians and Surgeons, 242, St. Vincent Street, Glasgow, C.2.

Membership of the Royal College of Physicians of Ireland (M.R.C.P.I.) is granted on the result of an examination, the details of which may be obtained from the registrar of the college, 6, Kildare Street, Dublin.

Fellows are elected by ballot from among the Members, and receive the designation F.R.C.P.I.

Graduates seeking the Fellowship of the Royal College of Surgeons in Ireland (F.R.C.S.I.) must pass in two examinations, a primary in anatomy, physiology, and the principles of pathology, and a final in surgery. Further particulars may be obtained from the registrar, the Royal College of Surgeons in Ireland, Dublin.

The Faculty of Radiologists offers a Fellowship (F.F.R.) to medical graduates of five years' standing who have spent at least one year in general clinical work at an approved hospital, have practised radiology exclusively for three years, and have held a radiological diploma for at least two years. Candidates are required to pass an examination and submit a thesis. Candidates who hold higher medical or surgical qualifications may be exempted from the examinations in general medicine, general surgery, or pathology. Full particulars may be obtained from the warden, the Faculty of Radiologists, 45, Lincoln's Inn Fields, London, W.C.2.

SPECIAL DEGREES AND DIPLOMAS

The regulations for the following diplomas can be obtained by applying to the examining bodies concerned.

Public Health

A diploma in public health (D.P.H.), is granted by the English and Scottish Conjoint Boards, and by all the universities of the United Kingdom, except Oxford, Cambridge, and Sheffield. Durham, in addition to the diploma, offers the degree of bachelor of hygiene to medical graduates of any approved university who attend courses for part I of the examination at Durham; the degree of doctor of hygiene is conferred on those holding the B.HY. who submit an approved thesis and pass in an oral examination.

Courses for the D.P.H. were suspended at all universities except the three colleges of the University of Ireland during the war, but have already been resumed in most places, with curricula revised to meet the new G.M.C. requirements. The Welsh National School of Medicine is considering a revised course for the diploma. At St. Andrews resumption of the course is being delayed by difficulty in finding a lecturer.

Psychological Medicine

The universities of London, Durham, Leeds, Manchester, Edinburgh, Belfast, Dublin (Trinity College), Ireland (National University), and the English Conjoint Board offer diplomas in psychological medicine. (The University of London also grants a diploma in psychology, taken chiefly by social workers.) The courses for the diploma have not all been resumed. The standard is being reconsidered, and the English Conjoint Board has already issued new regulations which meet in a considerable degree the recommendations of the Royal College of Physicians for a five-years' training of psychiatric specialists. At Manchester it is hoped to begin the D.P.M. course again next session, and Bristol is considering introducing a course of the new type. At Durham, Leeds, Edinburgh, and Belfast courses have not been resumed. Trinity College, Dublin, has made changes in the course. London University is holding courses and examinations under the old regulations.

Radiology

The Faculty of Radiologists grants a fellowship (F.F.R.) which has already been mentioned. The universities of London and Edinburgh grant the D.M.R. Edinburgh hopes to give separate courses in radiodiagnosis and radiotherapy next session. The M.RAD. degree of Liverpool University is granted in either radiodiagnosis or radiotherapy. The London University course is being held as usual. The English Conjoint Board offers two diplomas: one in medical radiodiagnosis (D.M.R.D.) and one in medical radiotherapy (D.M.R.T.).

Tropical Medicine

Liverpool University jointly with the Liverpool School of Tropical Medicine grants a diploma in tropical medicine and hygiene (D.T.M. & H.) and holds a course for it. The University of Edinburgh and the English Conjoint Board grant diplomas in tropical medicine and hygiene (D.T.M. & H.). The Edinburgh diploma was resumed this year; and courses for the English Conjoint D.T.M. & H. will be held again at the London School of Hygiene and Tropical Medicine.

Gynæcology and Obstetrics

Medical graduates who are on the British Register, or eligible for registration on it, may apply to the Royal College of Obstetricians and Gynæcologists for examination for the diploma in obstetrics (D.OBST.). The Univer-

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sity of Dublin also offers a diploma (D.G.O.) for which a course is held at Trinity College and the Rotunda Hospital; there have been some changes in the regulations this year. The Mastery of Midwifery granted by the Society of Apothecaries of London has already been mentioned.

Ophthalmology

Three examining bodies issue diplomas in ophthalmology—the University of Oxford (granting the D.O.), and the English and Irish Conjoint Boards (granting the D.O.M.S.). The Royal College of Surgeons is applying for a Supplemental Charter to enable ophthalmological candidates to obtain the F.R.C.S. on passing the ordinary primary examination and a special final examination equal in standard and similar in form to the ordinary examination.

Laryngology and Otology

The English Conjoint Board offers a diploma (D.L.O.) for those who have made a special study of the ear, nose, pharynx, and larynx.

Anæsthetics

The English and Irish Conjoint Boards offer diplomas in anæsthetics (D.A.). Candidates must have special experience in giving anæsthetics.

Child Health

Diplomas in child health (D.C.H.) are granted by the English and Irish Conjoint Boards; also by the National University of Ireland, with a course at University College, Dublin.

Tuberculous Diseases

Courses and examinations for the diploma in tuberculous diseases (T.D.D.) of the University of Wales have been resumed.

Bacteriology

Diplomas in bacteriology are ordinarily granted by the universities of London and Manchester and both are resuming courses next session. The course for the London University examination will be held at the London School of Hygiene and Tropical Medicine.

Clinical Pathology

The University of London offers a diploma in clinical pathology (D.C.P.), for which a year's course of study is required.

Physical Medicine

The English Conjoint Board offers a diploma in physical medicine (D.PHYS.MED.). Candidates must have held a registrable qualification for two years, and must have had two resident appointments occupying not less than a year.

Orthopædics

Liverpool University offers the degree of M.CH.ORTH., and courses for it are being resumed next session.

Industrial Medicine

The Society of Apothecaries of London and the English Conjoint Board have both, during the past year, instituted diplomas in industrial medicine (D.I.H.).

DENTAL DEGREES AND DIPLOMAS

There are schools of dentistry at the universities of London, Durham, Birmingham, Liverpool, Manchester, Leeds, Sheffield, Bristol, St. Andrews, Belfast, and Dublin; and at the University Colleges of Dublin and Cork, in the University of Ireland. Leeds grants a diploma (L.D.S.), a baccalaureate degree (B.CH.D.), and a mastership (M.CH.D.). The University Colleges of Dublin and Cork grant a B.D.S. and a M.D.S., and Trinity College, Dublin, offers a B.DENT.SC. and a M.DENT.SC. All the other universities mentioned except London offer L.D.S., B.D.S., and M.D.S. degrees; St. Andrews offers a diploma in public dentistry (D.P.D.) in addition. London University prepares students for the L.D.S. of the Royal College of Surgeons. Licences in dentistry are also granted by the Royal College of Surgeons of Edinburgh, the Royal Faculty of Physicians and Surgeons of Glasgow, and the Royal College of Surgeons in Ireland. The Royal College of Surgeons of England is applying for powers to grant a higher dental diploma, to be called a fellowship in dental surgery of the college.

The Defence Services

Royal Naval Medical Service

The usual regulations governing entry of medical and dental officers to the Royal Naval Medical Service were suspended during the war, and the only medical officers at present being admitted are those granted temporary commissions in the Royal Naval Volunteer Reserve. Candidates for entry must have had at least 6 months' experience in a house appointment. Some vacancies will be filled by selection of officers from among those who have served in the R.N.V.R. during the war. A small number of women medical officers are serving as surgeon lieutenants R.N.V.R. and one as surgeon lieutenant-commander R.N.V.R. (at Medical Department, Admiralty).

Candidates for the Royal Naval Dental Service must be registered under the Medical or Dental Acts and must also have a registrable qualification in dental surgery. The method of entry is similar to that for medical officers.

Opportunities are given to medical and dental officers R.N.V.R. to apply for transfer to the Permanent Service R.N. after about 6 months' service.

Royal Army Medical Corps

No direct applications for regular commissions in the R.A.M.C. are being invited at present. On the nomination of the Central Medical War Committee doctors are appointed to emergency commissions with the rank of lieutenant. Medical officers, after serving as emergency commissioned officers for one year on full pay, now have an opportunity of applying for a regular short-service commission under conditions set out in Army Council Instructions, and may subsequently be considered for permanent Regular Army commissions. The conditions governing the granting of these commissions are at present being revised. Recently qualified doctors wishing to be appointed to emergency commissions should apply to the secretary of the Central Medical War Committee, at B.M.A. House; or if resident in Scotland to the Scottish Central Medical War Committee, 7, Drumsheugh Gardens, Edinburgh, 3. Applicants should have held an appointment either as house-surgeon or house-physician for six months.

ARMY DENTAL CORPS

As in the R.A.M.C., no direct applications for regular commissions in the Army Dental Corps have been invited since the outbreak of war. All war-time appointments were to emergency commissions for the duration of the war; but dental officers, after serving as emergency commissioned officers for one year on full pay, had an opportunity of applying for a regular short-service commission. At present conditions in this service are being reviewed. Recently qualified dental surgeons wishing to enter the Corps should notify the secretary of the Central Dental War Committee, at 13, Hill Street, London, W.1, or in Scotland the secretary of the Scottish Central Dental War Committee, c/o the Department of Health for Scotland, Edinburgh, 1.

Royal Air Force Medical Branch

Since the end of the war arrangements in the R.A.F. have changed slightly. Commissions in the Medical Branch are still only given to those appointed to the R.A.F. Volunteer Reserve, and short service commissions are still in abeyance, but a limited number of permanent and extended service commissions are being granted.

Newly qualified doctors must have held a six months' house appointment in a civil hospital before being considered for service in the Medical Branch. Candidates must register with the Central Medical War Committee, through whom an interview and medical examination are arranged at the Medical Directorate of the Air Ministry. Doctors normally enter the Service with the rank of flying officer and are automatically promoted to the rank of flight-lieutenant at the end of a year if recommendations are satisfactory. Specialists enter the Service with a higher rank, but vacancies are relatively few. Flying officers begin with a short course at the Medical Training Depot, and are then posted to operational units, training units, recruiting centres, or general or station hospitals, at home or overseas. Besides ordinary general medical work, the medical officer has

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good opportunities for studying preventive medicine and hygiene, and aviation medicine.

The DENTAL BRANCH of the R.A.F. is separate from the Medical Branch, and appointments are still made through the Central Dental War Committee, organised by the British Dental Association. Regular commissions are still suspended, and candidates are appointed to the R.A.F. Volunteer Reserve.

Health Services at Home

PUBLIC HEALTH

THERE has been steady expansion in the field of public health since the first medical officer of health was appointed nearly a hundred years ago. In the early days the duties of the M.O.H. were largely concerned with sanitation, especially such matters as the safety of water-supplies and sewage disposal. The work of the pioneers in this field led to the general acceptance and application of standards; as a result, the need for detailed medical supervision of environmental hygiene has been reduced, though in some rural areas there is still much to be done. The medical officer must now retain general control and supervision of the work, but he largely delegates it to sanitary inspectors, health visitors, and others. So long as the general control remains with the medical officer trained in public health there can be only good in this.

Control of infectious diseases has always been one of the main concerns of the M.O.H. The old emphasis on isolation of infected persons has now been replaced by the provision of modern hospital treatment, but there remains the active home follow-up. Bacteriologists have made great advances in the identification of different strains within certain of the pathogenic species, and these new techniques applied to epidemic control have given the M.O.H. an instrument of precision in much of his epidemiological work. The application of specific prophylactic measures against various of the acute infections is now a major function of health departments. Much remains to be done, but the control of such diseases as diphtheria and enteric fever is in sight.

During the last thirty years preventive clinical work has come to occupy most of the medical officers employed whole-time in public health work. The organisation of the maternity, infant welfare, and school health services represents a large part of the administrative responsibility of the M.O.H. of a county or county borough. It is probable that there will be a steady increase in the part played by appropriately experienced general practitioners in the clinical side of this work, but its administration must clearly remain with the M.O.H., who is responsible for other preventive medical work. In counties one may look to the establishment of a divisional form of administration, in which divisional medical officers may deal with the detailed administration of these preventive clinical services and the environmental hygiene in the same area. This should lead to closer association between public-health medical officers and general practitioners. The maternity services will naturally be closely associated with the hospital obstetric service, and the school health and infant welfare services with pædiatric work in hospitals.

The tuberculosis and venereal disease services are specialist clinical services which must be closely linked with epidemiological and preventive work, in which both clinician and M.O.H. are concerned. The provision of treatment is a hospital function, whether outpatient or inpatient, but more is required than this. The follow-up of contacts in both diseases is of the highest importance, and in tuberculosis there is a special field of family care. There is here common ground for the M.O.H. and clinician which should lead to closer association, even though the hospital service now passes to another authority.

Hospital administration has been one of the main preoccupations of the M.O.H. of the large county borough or county in the last sixteen years. The National Health Service Bill provides for the transfer of hospital and specialist services to new Regional Boards. There will be medical administrative posts in the hospital service of the future but the public health service, as such, will be freed from the burden of hospital administration and enabled to concentrate on preventive medicine. The points of contact with the specialist services will be many, and full development of the social services of hospital and health department should lead to closer integration in the future.

The mode of entry to the service will probably not be, as in the past, through the clinical side, but through assistant administrative posts concerned with control of infectious diseases and organisation of clinic services. Thus there will be far less likelihood of medical officers who have taken postgraduate qualifications in public health devoting the rest of their professional lives to clinical work in a limited field. The very fact that those who undertake clinical preventive work will also be engaged in curative work will bring the administrative medical officer responsible for the organisation of clinic services into far closer contact with his professional colleagues.

The curriculum for the diploma in public health has been revised and now provides a first part which is suitable for men engaged in preventive clinical work or for those intending to specialise in tuberculosis or venereal diseases. A certificate is given to those who pass the examination for part I only. The course for part II provides for those who intend to take the diploma and enter the public service. Possession of a D.P.H. is necessary for anyone now appointed as M.O.H.

INDUSTRIAL MEDICAL SERVICES

THE stimulus which war gave to industry brought industrial medicine actively into the service of the country, for output depends on the health and well-being of the workers. The medical services will probably continue to grow in peace-time and it is likely that they will be integrated with the National Health Service. It is not possible to forecast the final form these services will take, but there is no doubt that many doctors in the future will find their life's work in industrial or occupational medicine. University chairs devoted to the subject have been set up at Manchester and Durham, and readerships are being established at Glasgow and Edinburgh. Again, the newly established chairs of social medicine at Oxford and Birmingham take industrial medicine (or industrial health, as it is now being called) under their wings, so students are likely to hear more about this subject in their undergraduate courses. Postgraduate courses are held from time to time in London, Birmingham, Sheffield, and Manchester. Diplomas in industrial health have recently been instituted by the Society of Apothecaries, the Conjoint Board of the Royal Colleges of Physicians and Surgeons, and Edinburgh University.

The term industry includes not only work carried on in factories, but also in mines and quarries, transport undertakings of all kinds, agriculture, and fisheries. Several Government departments deal with various aspects of the industrial medical services. For instance the Post Office, which employs more workers than any other department, has had a medical service since 1855, and, because it deals with engineering and manual workers in addition to office staffs, is partly an industrial medical service. Other Government departments, such as the Ministry of Fuel and Power, the Ministry of Supply, and, in a minor degree, the Ministry of Health through the local authorities, play some part in controlling industrial health services. But of all the departments supervising industrial health the main one is the factory department of the Home Office, seconded in 1940 to the Ministry of Labour and National Service.

FACTORIES

The factory department administers the Factories Act of 1937, with its regulations on accident and sickness prevention, hours of work, amenities, first-aid and ambulance rooms, and canteens. The staff now numbers 401, of whom 12 are medical inspectors. All members of the department, whether lay or medical, take part in the activities directed towards preventing illnesses and maintaining the health of the factory population. The medical inspectors are at present stationed in London, Birmingham, Sheffield, Liverpool, Manchester, Glasgow, and Wolverhampton, and from these centres are able to deal with factory health conditions in any part of the country. Under them 1750 general practitioners give part-time service as factory examining surgeons, examining all young entrants into industry, and periodically

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all those engaged in dangerous processes. They also issue certificates under the Workmen's Compensation Act for scheduled industrial diseases.

The mines medical service, described below, is responsible for the health of miners. The silicosis and asbestosis medical board consists of 11 whole-time medical officers and some part-time doctors. In addition about 10 whole-time temporary medical officers are employed in the South Wales area to assist in dealing with outstanding claims from miners for compensation for pneumoconiosis. The members of the board have special experience of chest diseases and issue compensation certificates to workers who develop silicosis or asbestosis; they also examine periodically workers in industries liable to produce these conditions. A separate board consisting of three doctors was set up in Manchester in 1941 to supervise cotton-workers who develop byssinosis, and to issue compensation certificates. All workmen's compensation schemes used to come under the Home Office but are now under the Ministry of National Insurance.

FACTORY MEDICAL OFFICERS

Before the war the practice of appointing whole-time or part-time works' medical officers was not universal; then there were only about 50 doctors employed in industry. But, partly as a result of the Factories (Medical and Welfare Services) Order, 1940, made by the Ministry of Labour and National Service, there has been an increase in the number of works' doctors. In 1943 there were 926 of them, of whom 63 were women. Whole-time doctors numbered 176 and part-time 750. The numbers would have been much higher had there not been a great shortage of doctors owing to the call-up for the Forces. During the war the Ministry of Supply built up a factory medical service under a chief medical officer. Both whole-time and part-time doctors were appointed to various factories throughout the country. Many of these war-time appointments are likely to become permanent now the war is over, since employers who experience the benefit of a well-run medical service in a factory rarely abolish it. At present works' doctors, except those in Government factories, are paid by private employers or firms. The workers in some cases tend to distrust the doctors' opinions on this account. Under a comprehensive medical service it should be possible to arrange that the doctor is employed by the State or some other neutral body.

Medical officers of factories who are interested in social problems have wide opportunities for their study and can also undertake the teaching of health and hygiene. They can strengthen the bonds between the factory service and the general medical and hospital services, treat accidents, reduce the chances of sepsis, follow up serious cases, and ensure that patients all return to work in the shortest time compatible with adequate treatment and reablement. Inevitably they will have to play an important rôle in the schemes for resettling disabled persons (whether from the fighting or civilian services) in industry. With their first-hand knowledge of the processes carried out in the factories, and of the physical and mental capacities of the workers, they will be able to place the disabled persons in suitable jobs and keep them under observation.

INDUSTRIAL HEALTH RESEARCH

Apart from the investigations and research into industrial diseases conducted by the medical inspectors of factories, the mines' medical officers, works' medical officers, and examining surgeons, much fundamental research into environmental conditions has been carried out by the investigators of the Industrial Health Research Board of the Medical Research Council. Problems investigated include those of hours of work, lighting and vision, heating and ventilation, accident-proneness, and sickness-absenteeism. The investigations have been mainly physiological and statistical, but clinical studies have also been made under the ægis of the Industrial Pulmonary Diseases Committee of the Medical Research Council, and include inquiries into the pneumoconiosis of South Wales coal-miners and the byssinosis of cotton-operatives. It became apparent that more clinical research into occupational diseases was needed and the council in 1942 appointed a director of research in industrial medicine. Finally, in 1943, a department for research was established under the council at the London Hospital.

The Association of Industrial Medical Officers was formed some years before the war by doctors interested in various aspects of industrial health, and branches have been established in various parts of the country. The new *British Journal of Industrial Medicine* is sponsored by the A.I.M.O. in conjunction with the British Medical Association. Information about the association may be obtained from the Secretary, c/o Standard Telephones and Cables Ltd., New Southgate, N.11.

LONDON COUNTY COUNCIL HOSPITALS

THE hospitals service of the London County Council provides special facilities for undergraduate instruction, and opportunities for experience for medical graduates who intend either to be general practitioners or consultants or to enter the L.C.C. Public Health and Hospital Service. At the beginning of the war the service contained 97 hospitals with beds for 71,694 patients. The 97 hospitals consist of 44 general hospitals, 32 special hospitals, and 21 mental hospitals and institutions for the mentally defective.

Treatment is provided in these hospitals for all kinds of acute and chronic illnesses, including fevers, tuberculosis, mental and nervous disorders.

HOSPITALS BRANCH

Medical superintendents of the hospitals, who are expected to be experienced hospital administrators, receive £1000 to £1800 a year, in hospitals with accommodation for from 160 to 1300 patients. In addition, medical superintendents are provided with an unfurnished house or quarters with payment by the Council of local and water rates.

The other full-time medical staff are classified as:

Grade	*Annual salary (basic)*
Deputy medical superintendent, class I	£850–£50–£1000
Deputy medical superintendent, class II	£800–£30– £950
Deputy medical superintendent, class III	£725–£25– £825
Deputy medical superintendent, class IV	£650–£25– £750
Senior resident surgeon, physician, or obstetrician, and senior assistant medical officer	£650–£25– £750
Assistant medical officer, class I	£455–£25– £530
Assistant medical officer, class II	£325
Senior house officers	£260
House-physicians and house-surgeons	£156

These officers are provided with board, lodging, and laundry. Clinical assistants, who are non-resident, receive £195 a year, with meals when on duty. Vacancies in the higher grades are filled as far as possible by promotion from the existing staff. In addition, a large number of part-time consultants and specialists are employed in the various hospitals, as well as some whole-time non-resident specialists at a salary of £1400–£50–£1650. In addition to basic salary, medical staff receive the cost-of-living allowance applicable to all the council's professional grades of staff.

A central histological laboratory, as well as seven group laboratories of the pathological service, serve a number of hospitals. Attached to the group laboratories are subsidiary laboratories situated in the various hospitals. Normally a medical staff of 25 is attached to these laboratories.

TEACHING FACILITIES

Courses in fever hospital administration for the diploma in public health, which were suspended during the war period, are now being held when required; refresher courses for medical officers released from H.M. Forces are held by arrangement with the British Postgraduate Medical Federation, University of London; other post-graduate facilities remain as they were. The British Postgraduate Medical School is at the Council's Hammersmith Hospital.

Increased use is being made of the Council's hospitals for teaching purposes. Arrangements have been made whereby maternity students have had training and experience in the maternity departments of the Council's general hospitals. The fever hospitals also provide for undergraduate instruction, and, when patients are available, for demonstrations in the diagnosis and treatment of smallpox for both undergraduate and post-graduate students. Students are resident during their course of instruction in some of the fever hospitals.

Most of the general hospitals are recognised training centres for candidates for the University of London

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M.D. examination; 18 of them for the final F.R.C.S. examination and the diploma in anæsthetics, and a number for the diploma and membership of the Royal College of Obstetricians and Gynæcologists. Seven general hospitals and Queen Mary's Hospital for Children, Carshalton, are partially recognised for the diploma in child health by the Royal Colleges of Physicians and Surgeons.

MENTAL HOSPITALS SERVICE

THE public mental hospitals in England and Wales are the responsibility of the local authorities. Apart from those hospitals administered by the London County Council, there are 65 hospitals under the control of county councils, and 26 hospitals under the control of county borough councils. The hospitals vary in size from the small borough mental hospitals with about 400 beds to the large county mental hospitals with over 2000 beds.

According to the interim revision of the Askwith memorandum published this year, assistant medical officers to mental hospitals receive a minimum commencing salary of £455, rising by annual increments of £25 to £555 yearly, with emoluments which must include board, lodging, laundry, and attendance. In addition, those medical officers who possess a diploma in psychological medicine receive a further £50 per annum. Suitable provision is made for the accommodation of married assistant medical officers. In the higher posts of deputy medical superintendent and medical superintendent no uniform scale of salaries is laid down, and these vary between the different hospitals. In addition to salary, emoluments are provided which usually consist of a house, furnished or unfurnished, fuel, and light. Permanent medical appointments are in all cases established posts within the meaning of the Asylums Officers' Superannuation Act, 1909.

Posts at these hospitals offer medical officers scope for initiative and promotion. Very few new appointments were made during the war, and medical staffs have been much curtailed. There should be good openings in these immediate post-war years.

The mental health services of the L.C.C. are responsible for a large medical service, vacancies in which are advertised from time to time. An applicant enters the service as assistant medical officer at a salary of £575 a year, rising by annual increments of £25 to £675. Salaries are graded through the various ranks to £1600, plus a cost-of-living bonus of £90 (£72 to £82 for women), paid to superintendents of large hospitals; a superintendent is also provided with an unfurnished house on the hospital premises. Assistant medical officers may be required to live in the institution which they are serving and to pay fixed rates for board, lodging, and laundry. Officers contribute to a superannuation fund. They are required to take a diploma in psychological medicine within three years of entering the service and the diploma carries with it a payment, in addition to salary, of £50 a year. Promotion is reasonably rapid for men.

MINES MEDICAL SERVICE

THE Mines Medical Service now consists of eight regional mines medical officers, with a chief mines medical officer and a deputy at headquarters.

The white-paper on coal proposed the establishment of this service "with a view particularly to checking wastage of labour." Thus much of the work of the medical staff is concerned with applications for release from the industry on medical grounds. Before the medical service was founded all such applicants were sent by the Ministry of Labour for independent medical examination. The functions of the service have been twofold: to relieve the workman of such examination, if the medical evidence put forward by him was sufficiently conclusive; and in doubtful cases where independent medical examination is necessary, to secure a high standard of examination. These services have been of value both to the workmen individually and in helping to check unwarranted wastage of labour. But it has always been realised that these activities, essential as they are at present, are not constructive, except in that they lead to better medical or surgical treatment of the patients concerned. From the start the medical officers have been enjoined to devote all the time possible to professional activities at the mines and in connexion with the hospitals, rehabilitation centres, and other institutions to which the miners go for treatment. Professional work at the mines themselves is increasing in volume. Medical officers have charge of the first-aid and ambulance arrangements both below and above ground; they study the working conditions in relation to the miners' health, and are getting a wide first-hand experience of the coal-mining community at work. Special attention is being given, and will be given increasingly, to a practical study of the causes of the so-called industrial diseases, and to measures for preventing or alleviating them. The field to be covered is wide, and previous work and experience have already shown that there are no easy roads to speedy improvement; but it is hoped to improve conditions gradually by concentrating on particular difficulties and problems. Several studies of this kind are already in hand. The use of morphine for the first-aid treatment of cases of painful injury underground has proved beneficial. A large number of cases have been treated with good results, the drug easing the patient and lessening the shock. The conditions governing the use of the drug at mines are strictly enforced. Various industrial hazards, such as dermatitis, epidermophytosis, Weil's disease, and occupational diseases such as the "beats" and pneumoconiosis, are continuously studied. The medical officers have also prepared the way for the establishment of medical treatment centres at collieries, and for the appointment of State-registered nurses to work in them. The regional mines medical officers will assist in the selection of nurses and will guide and generally advise them at the treatment centres in the early days of their appointment. The medical service is looking forward to the time when the whole of its energies can be concentrated on constructive work of this kind, and in the meantime will devote to it all the time that can be spared from dealing with the temporary problems and difficulties still arising out of the war.

PRISONS

AT the larger prisons whole-time officers are appointed, sometimes with deputy medical officers to assist them. Unfurnished quarters are provided or an allowance made in aid of rent. Posts are pensionable and promotions are made as vacancies occur. Candidates with a diploma in psychological medicine receive £50 per annum more on appointment than candidates without this qualification, and are given preference provided they also have good all-round general experience. At the smaller prisons no whole-time officers are employed; local practitioners are usually appointed as part-time officers. Further particulars can be obtained from the Prison Commissioners, Horseferry House, Thorney Street, Westminster, London, S.W.1.

STATE BOARDING-SCHOOLS.—In the past local education authorities have been concerned with boarding-schools mainly to provide for handicapped children and those healthy children who are unable to attend day-schools. Under the Education Act of 1944 local authorities must see that boarding education is open to all children for whom these authorities and the parents consider it desirable. This has been carried a step further in a Ministry of Education circular (no. 120, H.M. Stationery Office, 1*d*.). It explains the existing resources in county and voluntary, and in direct-grant schools, and mentions the arrangement already reached whereby local authorities may support pupils at independent schools outside the State system of education. It is hoped that these arrangements will be increasingly employed and that the independent schools will be willing to reserve more places for children educated at the public expense. The Minister is now to assemble a small committee to collect precise information of the boarding places in all types of schools available for the use of education authorities (apart from those earmarked for local purposes). At the same time the committee will work out a procedure by which the pooled vacancies can be sought by individual local authorities and can be fairly allocated. Local education authorities will be responsible for the selection of pupils and, where necessary, for payment of appropriate expenses under an approved income scale. The aim is to develop speedily boarding education for all suitable pupils.

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Services Abroad

INDIAN MEDICAL SERVICE

ALL further recruitment to the Indian Medical Service has now ceased, and the government of India has made no final decision about the disposal of serving officers.

Recruitment to the Indian Army Medical Corps (I.A.M.C.) which is purely a military medical corps, will be limited to Indian subjects, and will probably be restricted to candidates holding a qualification recognised for registration under schedules 1 and 2 of the Medical Council of India. At present all officers serving in the I.A.M.C. hold temporary commissions.

WOMEN'S MEDICAL SERVICE FOR INDIA

Admission to the service is by selection in India and England. Appointment is open to English and Indian qualified women. Vacancies are few—usually only 3 or 4 in each year—and there is little recruitment from England. There is also a training reserve of qualified women recruited from Indian universities. Since the outbreak of war no members of the training reserve have been sent to England for postgraduate study, and leave out of India has also been restricted. Vacancies in the service are being filled by doctors in India as need arises, but applications from Europeans holding higher medical qualifications will be welcomed. The post of medical adviser in the United Kingdom is now held by Dr. Charlotte Houlton, C.B.E., S.P.G. House, 15, Tufton Street, London, S.W.1.

COLONIAL MEDICAL SERVICE

Vacancies in the Colonial Medical Service occur most often in tropical Africa and Malaya. Medical officers are required, to replace normal wastage and to provide staff for expansion; they must be British subjects and hold a medical qualification registrable in the United Kingdom. Candidates must have been born on or after Jan. 1, 1905, but, in addition, special contract terms are available for men up to the age of 45 or for younger candidates who would prefer to serve in the Colonies for a term of years rather than for their whole career.

Medical officers are appointed in the first instance for general service. There are opportunities for field investigation, and posts are filled from within the service for work in special branches of medicine and surgery and in public health. Medical research departments exist in the larger Colonies. Specialist appointments are usually reserved for officers holding higher appointments who have shown outstanding merit in a particular branch of medical practice. Opportunities to gain these qualifications will be made available whenever possible, and selected candidates may be required to attend a course of instruction in tropical medicine and hygiene before proceeding overseas, or else to attend such a course during their first leave period. Vacancies will occur in greater numbers in future for women with experience in gynæcological and maternity work, school public health, and child welfare.

Various Government medical departments employ about 700 European medical officers, including some 30 women, and about 1200 locally appointed medical officers. Depending upon the territory, such diseases as malaria, yaws, leprosy, sleeping sickness, plague, yellow fever, cholera, and other conditions associated with the tropics are encountered in addition to the usual diseases experienced in any medical practice. An officer in the Colonial Medical Service has special opportunities for the practice of preventive medicine, as well as opportunities for teaching and research.

The medical and health services will be considerably expanded in order to fulfil the schemes for public-health development already planned. Full particulars of terms and conditions of service may be obtained from the Director of Recruitment, Colonial Office, 15, Victoria Street, London, S.W.1.

SOUTHERN RHODESIAN MEDICAL SERVICE

The Government of Southern Rhodesia maintains a medical and public-health service with an establishment of 18 whole-time administrative specialist or public-health officers and 43 Government medical officers.

Rates of pay for the whole-time officers are:

	Annual Salary
Medical Director	£1800
2 Assistant Health Officers, School Medical Officer (man), Field Officer, 2 Radiologists, 2 Directors of Laboratories, Government Pathologist, Government Psychiatrist, Medical Superintendent Mental Hospital, Medical Superintendent Leprosy Hospital	£1350–£50–£1500
Assistant Medical Superintendent Mental Hospital	£1000–£50–£1150
School Medical Officer (man), 2 School Medical Officers (women)	£850–£30–£1000

Government Medical Officers are graded as follows:

2 Senior Government Medical Officers	£1000–£50–£1250
41 Government Medical Officers	£600–£25–£900

Whole-time medical officers and the two senior Government medical officers are not permitted private practice but are allowed consultant practice. Government medical officers, except those stationed at Salisbury or Bulawayo, are allowed private practice, the value of which varies from £100 per annum upwards, according to the station. The duties of Government medical officers include supervision of the 18 Government hospitals and numerous native clinics, and attendance on police, boarders in Government schools, and prisoners. They also undertake medico-legal work and public-health duties. Leave may be granted at the rate of one-eighth of service, and may be taken in periods not exceeding 184 days at a time. Study leave may also be granted.

After two years' service medical officers under the age of 45 can be appointed to the fixed establishment and contribute to a pensions' scheme. The retiring age is 60. On appointment Government medical officers are usually stationed at Salisbury or Bulawayo, where they are not permitted private practice but are paid an allowance of £130 per annum in compensation. They are usually required to do relieving duties at various outstations until a permanent vacancy occurs. Appointments in Great Britain to the service are made by the High Commissioner for Southern Rhodesia, Rhodesia House, 429, Strand, London, W.C.2, who will supply further details on request.

SUDAN MEDICAL SERVICE

The Sudan Medical Service aims at providing a complete Health Service for the Sudanese peoples, for Government officials, and for the Sudan Defence Force. The area of the Anglo-Egyptian Sudan is about a million square miles—about the same size as British India—and the total population is probably still less than 8,000,000. In accordance with the terms of the Anglo-Egyptian Agreement of January, 1899, the country is under the joint protection of Great Britain and Egypt, and its connexion with the British Government is through the British Ambassador in Cairo and the British Foreign Office.

The country is embarking on a new period of development in the educational, political, and economic spheres, and it is the policy of the Government that Sudanese shall have the opportunity of filling all Government posts for which they may be fitted by personality, ability, and training. It is therefore important that newly appointed British officials should be sympathetic to this policy, and should be ready and willing to play their part in assisting towards its achievement.

The personnel of the Medical Service on the British side consists at present of about 44 doctors, 32 nurses, and some public-health inspectors and laboratory and X-ray technicians. On the Sudanese side there are more than 80 doctors—trained at the Kitchener School of Medicine in Khartoum—some of whom have had postgraduate experience in London, as well as public-health officers and sanitary overseers, medical assistants in charge of dispensaries, and a large number of hospital orderlies, nurses, and midwives.

The headquarters of the service are in Khartoum; and here, and in the adjacent town of Omdurman, are the central hospitals and specialist services, the Kitchener School of Medicine, the Stack Laboratories, and Midwives' and Nurses' Training Schools. The project for an entirely new hospital of over 400 beds for Khartoum has been initiated, and construction work will be started as soon as circumstances permit. Outside Khartoum the country is divided into seven main provinces, and in

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the principal town of each there is a large and well-equipped hospital. In the smaller towns there are other hospitals each in charge of a Sudanese doctor, and there are some 400 dispensaries serving the still smaller towns and rural areas. British medical inspectors are attached to the main hospitals and may also supervise the areas in which they serve.

As there are hardly any private practitioners in the country all medical, surgical, gynæcological, and public-health and preventive work is carried out by members of the service. There is also a varying amount of administrative work to be done: medical boards must be held, and school-children examined. Though it may be possible for work in the outstations to be arranged so that a man who is keen either on medicine or on surgery may be able to devote himself more to the branch he prefers, all junior members of the service should be competent to undertake whatever comes their way. At present most specialist appointments are filled by selection from the more senior medical inspectors, and such promotion, which depends on the occurrence of vacancies, is rare before 12 or more years of service. All specialist appointments are held in the Khartoum-Omdurman area, and the holders may be called upon to act also as lecturers and teachers in the Kitchener School of Medicine, receiving fees, additional to their pay, for their services in this capacity.

Medical inspectors, if appointed on probation for pension, enter scale C5 at £E.720, unless a higher salary is granted in recognition of age, experience, and qualifications. Candidates over the age of 26½ who have war service will have their starting salary fixed in such a way as to give them credit for such service. Pay in scale C5 rises by 5 biennial increases to £E.1080, followed after 3 years at that rate by an increase to the maximum of £E.1200.

Medical inspectors have prospects of promotion to posts carrying a higher salary. At present these are:

1 Director	maximum	£E.1800
1 Assistant Director, Research	,,	£E.1500
2 Assistant Directors	,,	£E.1400
4 Specialist posts (in medicine, surgery, gynæcology, and ophthalmology)	maxima	£E.1750–1400
3 Province Medical Inspectors	maximum	£E.1300
1 Medical Officer of Health	,,	£E.1300

No income-tax is at present payable in the Sudan.

The probationary period is usually 2 years, after which, subject to passing the prescribed Arabic examination, and to the recommendation of the director, a medical inspector is eligible for permission to join the pension scheme, which includes provision for widows and orphans. Contributions are at the rate of 5% of salary, and retirement on pension is allowed at 48 if by that time 15 years' service has been completed. After 24 years' service the pension is half of the mean of the last two years' salary. A gratuity is payable on voluntary retirement after 7 years' service.

Private practice is permitted, provided that it does not interfere with official duties, but except in a few of the larger towns the opportunities for private practice are few. A doctor is not allowed to charge private fees for work performed in a Government hospital.

In normal times leave of 90 days is granted every year after the first 18 months of service, and study leave may be given in addition for special purposes, but not usually until after 7 years' service has been completed. Full pay is drawn during leave periods and there are allowances towards the cost of passages for officials and their families. No free quarters are provided. Government houses can usually be obtained on payment of rent and other charges. These vary according to the station and the accommodation available but are usually between £E.40 and £E.80 per annum.

The service provides good professional work combined with an open-air life. Work may mean travelling on inspection tours by rail, steamer, air, car, or animal transport. The climate varies from the hot dry Northern zone, through the central area which has a 3–4 months' rainy season, to the Southern zone, in which conditions become increasingly tropical as the southern border of the Sudan is approached. The general level of the country rises from 1200 feet at Khartoum to 2000 feet above the sea at Nimule, on the Uganda frontier. There are good opportunities for exercise—tennis, golf, and polo being the main afternoon games. There are swimming pools in the larger towns. In the Southern zone there is plenty of shooting and in many places very good fishing.

Applicants in the United Kingdom must be British born and should be under 30 years of age and preferably unmarried. An official is allowed to take a wife out to the Sudan after reaching the age of 27 or on completing 4 years' service, whichever happens first. Candidates selected for appointment will as a general rule be required to undergo a course of instruction at either the London or Liverpool School of Tropical Medicine, before sailing. The tuition fees are borne by the Government and a subsistence allowance of not less than £E.5 a week is paid during the course.

Candidates selected for appointment with the Sudan Government receive free transport from their home to their station in the Sudan. As appointment dates only from the date of their arrival at the Sudan frontier, they are given to cover the cost of the journey an allowance not less than the salary they would have earned if their appointment had dated from the date of embarkation for the Sudan. The conditions of service given here are liable to alteration in accordance with Government regulations. Further particulars and information about vacancies may be obtained from Dr. H. C. Squires, C.M.G., Consulting Physician to the Sudan Government, 93, Harley Street, London, W.1. (Telephone: Welbeck 3423.)

REGISTRATION

No-one is a legally qualified medical practitioner unless his name appears on the Medical Register kept by the General Council of Medical Education and Registration of the United Kingdom. The council is a standardising body, ensuring that there is a prescribed minimum of medical education and examination requirements; it is also responsible for discipline within the profession.

The number of students admitted to medical schools in Great Britain and in Eire during the academic year 1944–45 was 2612, and for the year 1945–46, 2610.

NUMBERS OF UNDERGRADUATES AND PRACTITIONERS IN THE YEARS 1936–45

Year	Starting study in October	New graduates						Total no. in register on Dec. 31
		England	Scotland	Ireland	Colonial	Foreign	Total	
1936	2544	920	490	223	260	12	1905	59,010
1937	2297	1096	593	239	273	13	2214	60,163
1938	1735	1150	590	295	277	53	2365	61,420
1939	2623	1437	692	356	296	187	2968	63,410
1940	2398	1323	673	315	57*	16*	2384*	64,679*
1941	2361	1189	632	285	134*	1056*	3296*	66,995*
1942	2468	1663	593	381	206*	713*	3556*	69,428*
1943	2426	1501	611	405	153*	862*	3532*	71,882*
1944	2612	1196	619	307	320*	529*	2971*	73,646*
1945	2610	1268	581	428	124*	265*	2666*	75,133*

* Including temporary registrations

The number of newly qualified in 1944 was 2122, and in 1945 was 2277. Since 1940 there have been 4258 temporary registrations in the colonial and foreign section of the register which are outside the stream of normal demand and supply; there were 322 such registrations in 1945. This form of registration ceased on Feb. 24, when temporary colonial registrations totalled 827, and temporary foreign registrations 3553.

Dr. F. M. Madwar, director of the malaria section of the Egyptian ministry of health, will speak at the Egyptian Institute, 4, Chesterfield Gardens, London, W.1, on Thursday, Sept. 5, at 6.30 P.M. His subject will be the Eradication of *Anopheles gambiæ* from Egypt.

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Postgraduate Education

In London

The University of London is expanding its provisions for postgraduate studies and has established the BRITISH POSTGRADUATE MEDICAL FEDERATION to develop and coördinate the educational facilities in London. Beginning with the university's postgraduate departments in general medicine, general surgery, obstetrics, and pathology at the Postgraduate Medical School and Hammersmith Hospital, the federation will include in the coming year the Institute of Child Health at Great Ormond Street, where a professorship has already been established, and the Institutes of Neurology at Queen's Square, of Laryngology and Otology at Gray's Inn Road and Golden Square, and an Ophthalmic Institute at Moorfields and the Central London Ophthalmic Hospitals. It is hoped to establish other institutes for teaching and research: in dermatology with the help of St. John's Hospital for Diseases of the Skin, in diseases of the chest with the Brompton Hospital, in genito-urinary diseases with St. Peter's and St. Paul's, in cardiology with the Heart Hospital, and in orthopædic surgery with the Royal National Orthopædic Hospital. Until the teaching schools at these hospitals can be staffed and equipped as university departments, they will collaborate with the federation and its constituent institutes.

The Maudsley Hospital already carries a university school, which will probably soon be brought into the federation as the Institute of Psychiatry.

The university has thus been able to make a beginning towards providing postgraduate education and training for specialists of an approved standard in medicine, surgery, and the major special branches, and graduates should apply to the Central Office of the Federation at 2, Gordon Square, London, W.C.1 (Tel.: Museum 6616), for details of opportunities and courses.

The central office plans to collect details of postgraduate facilities throughout the country and will shortly be able to provide up-to-date information of the opportunities available in London and elsewhere. The director and staff of the central office are always glad to advise graduates, who should arrange appointments in advance in order to avoid delays.

The accommodation at the institutes and associated schools and hospitals of the federation will not be sufficient for some time to meet the demands, especially in general medicine, general surgery, and obstetrics, so there must at first be some selection for the available places. Preference will be given during the coming year to ex-Service applicants and to graduates sponsored and recommended by their universities and governments. At all the institutes and schools associated with the federation courses of instruction and clinical work in wards and outpatient departments will be arranged, and the usual hospital appointments for clinical assistants, house-physicians and house-surgeons, and registrars will be available for the training of specialists.

At the undergraduate medical schools and teaching hospitals the usual hospital appointments provide postgraduate training of a high standard in all branches of medicine, but they are limited in number and vacancies are usually filled by their own graduates. Some of the medical schools arrange revision courses from time to time, suitable for candidates for higher degrees and diplomas, and a few places in these courses are available for selected graduates from other schools and from overseas.

For graduates who cannot be accommodated in the schools of the federation, or who do not require organised instruction and training, there are a number of other general and special hospitals where opportunities are available for attendance in wards and outpatient departments, and where short courses of lectures are arranged from time to time to meet temporary requirements, such as the preparation for specific examinations. The Fellowship of Medicine (see below) arrange courses of lectures of this kind, as need arises.

The central office of the federation will continue in the coming year to arrange intensive refresher courses lasting a fortnight for general practitioners released from the Forces, and as the demand from the ex-Service practitioners diminishes, similar courses will be provided for other general practitioners, including those working under the National Health Insurance scheme. These courses will be held at voluntary and municipal hospitals other than those engaged in undergraduate teaching, and will be advertised in the medical press. When the National Health Service is instituted other types of postgraduate education will be offered, to enable general practitioners to keep in closer touch with educational centres and teaching hospitals. Transitional arrangements in the coming year should give valuable experience for the future.

* * *

The FELLOWSHIP OF POSTGRADUATE MEDICINE, which has a bureau at 1, Wimpole Street, London, W.1, provides general information on postgraduate work, and arranges, at various hospitals, courses of instruction which may be classed under two main headings:

1. Weekend courses, occupying the whole of a Saturday and Sunday, for general practitioners. These are given in various general and special hospitals in such subjects as general medicine and surgery, obstetrics and gynæcology, ear, nose, and throat conditions, ophthalmology, children's diseases, and rheumatic diseases.
2. Short clinical courses for candidates for the M.R.C.P. and F.R.C.S. (final) given shortly before the examinations.

Twice a year revision courses in anæsthetics are arranged in Oxford and in London; also lecture-demonstrations for primary F.R.C.S. candidates, and occasional courses for M.R.C.O.G. candidates and D.C.H. candidates.

Other courses are arranged from time to time in proctology and urology. It is hoped to add to the number and variety of courses as facilities permit.

Some London Courses

SURGERY.—The Royal College of Surgeons has arranged a course of surgical lectures and demonstrations to be delivered at the college in Lincoln's Inn Fields, London, W.C.2, at 5 P.M. daily, between Oct. 21 and Nov. 6. A course of lectures in anatomy, applied physiology, and pathology will be given between Sept. 2 and Oct. 18. Fellows and members of the college will be admitted without charge to either series of lectures but must apply for a card of admission. Similar courses of lectures will be held in the early part of next year. These courses of lectures must not be regarded as classes specially arranged for the final and primary fellowship examinations: but they are so planned as to be helpful to candidates, and also to practising surgeons, by dealing with the practical application of recent advances.

The college maintains a library, museums, and laboratories for the use of medical graduates from all parts of the world. Fellows and members enjoy these facilities by right, but they have also been made open, on suitable introduction, to other graduates of medicine, and to undergraduates.

The Arris and Gale and the Hunterian Lectures provide opportunities for the presentation of original work in anatomy, physiology, pathology, and surgery. The college awards several prizes for meritorious work as well as many fellowships for those who desire to engage in practical work in the museum and laboratories or to devote some time to research.

PUBLIC HEALTH.—Most university courses in public health have now been revived. Before the war a D.P.H. was granted by all the British universities except Oxford, Cambridge, and Sheffield. New requirements by the G.M.C. have caused universities to revise the course for this examination, which is now taken in two parts, the first leading to a certificate in public health (C.P.H.), taken after three months' work, and the second to the diploma. The London School of Hygiene and Tropical Medicine offers a course beginning in October and lasting nine months, and designed primarily for those intending to seek posts as medical officers of health. All vacancies for the full course for the diploma have been filled, and there is a waiting-list, but in view of the development and subdivision of medical work in the public-health service, some places in the course for the certificate have been reserved for doctors who intend to undertake public-health work other than that of a M.O.H. The

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Royal Institute of Public Health and Hygiene also offers courses for the diploma, conforming to the new regulations; the next course begins in September.

PSYCHOLOGICAL MEDICINE.—Courses are at present in abeyance at many of the universities which used to grant a diploma in psychological medicine. The Royal College of Physicians have recommended a five-year training for psychiatric specialists, and the English Conjoint Board has already issued new regulations for the diploma, which extend the course considerably. After June, 1947, candidates will have to show that they have completed at least two and a half years of special study, including six months' daily attendance in a recognised neurological department, eighteen months' whole-time experience in a recognised institution for mental diseases, and six months' whole-time study of child psychiatry and mental deficiency. These, moreover, are interim arrangements, pending the inception of a full five-years' curriculum of studies and clinical training.

The universities of London, Durham, Leeds, Manchester, Edinburgh, Belfast, Dublin (Trinity College), Ireland (National University), and the English and Irish Conjoint Boards normally offer diplomas in psychological medicine. The courses for the diplomas of Durham, Leeds, and Belfast universities are at present suspended, and at Edinburgh future courses will depend on the demand and on the staff available.

The usual course for the D.P.M. is being held at Maudsley Hospital from June to December. In June and July lectures and practical instruction are given on the anatomy and physiology of the nervous system, and on psychology, covering part I of the D.P.M. syllabus. From September to November inclusive the lectures with clinical demonstrations cover all aspects of psychiatry and mental deficiency; and clinical instruction in psychiatry and neurology complying with the requirements of the examining bodies is arranged. Lectures and demonstrations are also given on neuropathology. Clinical instruction is given at the Maudsley Hospital and is available also at St. Ebba's Hospital, Sutton Emergency Hospital, Banstead Hospital, and other London County Council mental hospitals and institutions for mental deficiency. Information can be obtained from the Dean, Maudsley Hospital Medical School, Denmark Hill, S.E.5.

The Tavistock Clinic has completed its move to permanent quarters at 2, Beaumont Street, London, W.1. The psychotherapy of both adults and children as outpatients, based on analytical concepts, which has characterised the clinic's activities in the past, is being developed, and particular attention is being given to group psychotherapy. In addition to therapeutic work, the clinic and the associated Tavistock Institute of Human Relations are studying techniques in preventive psychiatry. These include mothers' discussion groups, selection techniques, and techniques for improving interpersonal relations in school and industry and similar psychological and sociological procedures.

The educational programme includes courses for psychologists and social workers as well as doctors. The course for psychiatrists specialising in child psychiatry, arranged jointly with the Provisional National Council for Mental Health, will be continued. Postgraduate instruction for doctors wishing to acquire experience of the approach to psychotherapy in adult cases of neurosis and allied behaviour disorders will be started in October, 1946. The number of students accepted will be limited and admission to the course will be by selection. Some lectures in this course may be open to a wider medical audience. A weekly seminar in psychological medicine for general practitioners will also be held throughout the winter session if there is sufficient demand. Inquiries about training activities and fees should be addressed to the Director of Studies, Tavistock Clinic, 2, Beaumont Street, London, W.1.

The Institute of Psycho-Analysis, 96, Gloucester Place, London, W.1, provides training in psycho-analytic theory and technique. The course is part-time and lasts about four years. It includes a personal analysis, attendance at lectures and seminars (held in the evenings), and clinical work done under supervision. Students are required to obtain general psychiatric experience at other clinics and hospitals, since the Institute does not set out to teach all aspects of psychiatry. Completion of the course to the satisfaction of the training committee qualifies the student for election as an Associate Member of the British Psycho-Analytic Society. In addition to this main course designed for those intending to specialise, the Institute gives briefer courses from time to time on the application of the principles of psycho-analysis to medical problems. These are advertised in the medical press.

TROPICAL MEDICINE.—A diploma in tropical medicine is required by those seeking appointments in the tropics. Diplomas are granted by the English Conjoint Board, by Liverpool University jointly with the Liverpool School of Tropical Medicine, and by Edinburgh University. Courses are being held at Liverpool and Edinburgh. The London School of Hygiene and Tropical Medicine gives courses for doctors taking the Conjoint diploma. It is open to all qualified practitioners, but those not holding a qualification registrable in England should consult the secretary of the Conjoint Board, 8, Queen Square, London, W.C.1. The number of vacancies is limited, and those wishing to take the course should apply early to the Registrar, London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, London, W.C.1.

Postgraduate Courses in Scotland

The EDINBURGH POSTGRADUATE BOARD FOR MEDICINE, which represents the university, and the Royal College of Physicians and the Royal College of Surgeons of Edinburgh, arranges programmes of graduate studies. Five general refresher courses, for general practitioners, each lasting a fortnight, have already been held, and two more are arranged for the long vacation. These are expected to run at regular intervals during the coming year; they are well attended, and not all those applying can find places. Classes in postgraduate surgery, lasting 10 weeks, have also been held, and some 280 surgeons have attended, but it is not intended to hold further short courses of this kind. Instead there will be two courses, each lasting 5 months, one beginning in October of this year and the next in March, 1947. Two courses in internal medicine, each lasting 10 weeks, have been held during the current session and have been attended by about 140 doctors. Each term the board arranges five lectures on subjects of wide biological interest; those for the forthcoming session are not yet announced, but those in the past session dealt with such subjects as the biology of death; uranium and neutrons; form and function; chemotherapy toxicity and chemical competition; and virus developments. Courses in midwifery, gynæcology, and pædiatrics, lasting a fortnight, have been arranged for general practitioners and have proved very popular.

The large size of the undergraduate school makes it difficult to provide detailed clinical teaching for postgraduates, but the board is considering ways of improving the position. The university and the Royal College of Surgeons have opened their libraries to those taking the longer postgraduate courses. The board has helped the dean of the faculty of medicine in placing candidates for posts under the demobilised medical officers scheme. Information may be had from the Acting Director of Studies, Postgraduate Board for Medicine, University New Buildings, Edinburgh.

GLASGOW UNIVERSITY has arranged for general practitioners a postgraduate course in obstetrics and pædiatrics, beginning in September and lasting a fortnight; and also general courses, also lasting a fortnight, to be arranged during the session according to demand. A course of lectures and clinical demonstrations on recent advances in internal medicine, lasting 7–8 weeks, will be held from October to December, and a similar course in surgery will run concurrently with it. Courses in diagnostic and therapeutic radiology, and probably in medical pædiatrics and some other specialties, will be arranged. Inquiries should be addressed to the Convenor, Committee on Postgraduate Medical Education, Glasgow University.

THE Home Secretary has appointed Dr. R. A. Young a member of the advisory committee on the administration of the Cruelty to Animals Act in place of the late Sir Farquhar Buzzard.

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Special Articles

STRASBOURG AND MANCHESTER

A PROPOSED LIAISON

ROBERT PLATT
M.D. Sheff., F.R.C.P.
PROFESSOR OF MEDICINE IN THE UNIVERSITY OF MANCHESTER

THE idea of a close liaison between the universities of Manchester and Strasbourg originated from some of the Manchester staff and students, and a party of students has already made a visit to the proposed sister university. The University of Strasbourg then invited Manchester to send three delegates from their staff, and on July 4 the professors of French, cryptogamic botany, and medicine (representing three major faculties) set off from Ringway airport.

We were in Paris in $2^1/_2$ hours where we were entertained to lunch by representatives of the French Ministry of Education. We travelled to Strasbourg the same evening, and during our stay there worked independently, each one being shown round and entertained by members of his own faculty.

The medical school is accommodated in a series of institutes, in close touch with the Hôpital Civil; in fact, the various departments of anatomy, physiology, and pathology, though in separate buildings, are in the same grounds as the clinics of the hospital. There are 2200 beds and about 800 medical students, and it would be no exaggeration to say that equivalent accommodation does not exist at any British medical school. Strasbourg is recovering rapidly from damage by air-raids and disorganisation due to German occupation, and most departments are already in full action. One of the biggest difficulties at present is the lack of the British and American literature of the war years. This is being gradually made up, partly by the use of microfilms; but reprints of important British papers would be very welcome.

We were there primarily to explore the possibilities of exchange of students or postgraduates, and to decide whether it was possible to arrange visits and lectures by members of staff. It was therefore important to find out in what respect the medical curriculum differed from our own.

The normal medical course is six years and is much the same as ours, with two major exceptions. Students do elementary clinical work from the first year onwards, in addition to their other studies; and in the fourth or fifth year some of the students—usually not more than 10—are selected by examination to become interns. These then follow a different course and do not qualify until they have done another four years while actually resident in the hospital. During this time they change at intervals from one clinic to another (medical, surgical, pædiatric, &c.).

This selection of the élite for a special course is highly desirable, though possibly the selection is not made at the best time. I would prefer to see in our own universities an honours school of medicine in which selected students would learn more organic chemistry, would spend an extra year at least in physiology, and pursue a more advanced course of study with resident experience in clinical subjects. This would be one solution of the old conflict between the desire to give the best students a really intelligent education, and the need to provide a basic technical training for the average. Such subjects as the history of medicine could be introduced into the honours course without it being necessary to answer the question "What use are they?"

An interesting experiment at Strasbourg is the appointment, recently made, of a professor of biology in the medical faculty, whose course of instruction will replace the usually ill-adapted studies in botany and zoology shared by medical and science students. The clinics are organised on the Continental system with a single director for every clinic or service, each of which may comprise as many as 250 beds. On such a unit there will be perhaps three assistants who are experienced physicians or surgeons allowed to engage in private practice. There is also a chef de clinique who would correspond with our resident medical officer. He has an assistant, and the remaining residents are the intern students already referred to. Each clinic has its laboratories and laboratory workers, and full facilities such as X-ray department, electrocardiograph, or operating-theatres as necessary.

It is easy to see advantages and disadvantages in both our system and theirs. Owing to the differences in the medical course there are difficulties in arranging exchanges between the two universities, but it is hoped that, at the very least, vacation visits can be arranged during the summer months. We hope shortly to have a return visit from our colleagues at Strasbourg, when such questions can be further discussed. Often in the past lip-service has been given to the notion of a closer liaison between the cultural interests of Britain and the Continent, but this beginning seems likely to lead to something more concrete, a true bond between the universities, sponsored and encouraged by the authorities on both sides.

Throughout our stay in Strasbourg we were the guests of the university, and in our many intimate discussions—often in not too good French or English—we caught glimpses of what some of our colleagues had been through. Several had been in concentration-camps, many had relatives who had never returned. This brief note gives no hint of the truly fraternal feeling evident during our visit. The meeting was like a reunion of members of a family whom long years of war had separated.

BRITISH MEDICAL STUDENTS' ASSOCIATION

THE British Medical Students' Association, founded during the recent war, has extended its activities considerably in the first post-war year, both in the national and in the international fields.

Thanks to relaxation in paper control, the association has been able to publish a national journal for medical students this year. The first number, a special international edition, is already on sale, and contains an account of the new world student organisation which is now being born in Prague; the international secretary of the association has been several times to Prague to help with the antenatal care of this hopeful child. His report on some medical and social aspects of Czechoslovakia also appears in the first issue of the journal. The second number will be published in October, and the journal will afterwards appear quarterly, and will be available in almost all the universities and medical schools of Great Britain and Ireland. It will cover a wide range of technical and non-technical subjects, and will contain contributions from both students and eminent seniors in the profession. This journal, it is hoped, will bring students from all parts of the country into touch with one another.

The National Health Service Bill presented several problems for the B.M.S.A. It was clearly the duty of the association to try to discover the opinions of the medical students of the country on this important issue, but to have convened a special representative meeting in London to discuss it would have been too expensive for the constituent organisations. A questionnaire was therefore circulated to every medical school, including the few which are not members of the B.M.S.A., and was answered by a satisfactory proportion of students. Results were analysed by the British Institute of Public Opinion, to whom the association is also indebted for advice on the questions to be asked. The final results are to be drawn up in the form of a report which will be presented to the Minister of Health.

Student exchange with foreign countries has long been recognised as a valuable part of teaching and

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education, and the B.M.S.A. has organised several exchange schemes, mostly reciprocal, with such countries as Sweden, Denmark, Czechoslovakia, and Switzerland. Several parties of foreign students have already arrived in this country, and many students from Great Britain are spending their summer vacations abroad, studying medical methods and at the same time having good holidays. An appeal for medical books for Czech students brought extremely good results.

The same peripatetic tendency has been seen at home this year. A clinical conference, organised by the association in conjunction with the medical students' representative council of the University of Durham, was held at Newcastle-on-Tyne in July. It was attended by representatives from the northern region of the B.M.S.A., and observers from Scotland and Ireland were also present. This conference lasted four days and included clinical instruction and lectures in the Royal Victoria Infirmary as well as several visits to other institutions and places of interest, notably to two miners' reablement centres. Apart from formal work, the conference gave ample opportunity for the various delegates to meet each other and to exchange information and opinions.

At Easter Mr. J. J. A. Reid, B.SC., the president of the association, visited the Sanatorium des Étudiants de France, near Grenoble, and studied the French students' anti-tuberculosis scheme, which is very good. He has prepared a report to be considered by the B.M.S.A. and the National Union of Students, in the hope that some similar plan may be possible in Great Britain. Meanwhile, recent advances in student health work are being investigated.

The Glasgow branch of the association started a blood-donor campaign with sessions at times convenient to students, and obtained 180 pints of blood for the local transfusion service, which needed it badly. This scheme is to be expanded in the next few months. This branch has also established, after investigating the point with the Ministries concerned, that clinical clerks are not liable to health and unemployment insurance contributions—an important point, since students had been made to pay contributions while clerking in some Glasgow and district hospitals. The Durham branch has produced a report on the question of compulsory and non-compulsory lectures.

The film secretary of the association has reported on the position of medical films in the past and present, and their probable place in future teaching. Four medical schools are now producing their own films.

The use of wall-newspapers is spreading in many schools, and a panel of lecturers is being prepared for the use of medical-student societies. The report on the cost of medical education is to be published this year.

Meetings, visits, and discussions have been arranged in the various regions, and the B.M.S.A. is in an even better position to help and serve the needs of medical students than it was a year ago.

INFECTIOUS DISEASE IN ENGLAND AND WALES

WEEK ENDED AUGUST 17

Notifications.—Smallpox, 0; scarlet fever, 690; whooping-cough, 2097; diphtheria, 251; paratyphoid, 60; typhoid, 53 (19 in Cardiganshire); measles (excluding rubella), 2712; pneumonia (primary or influenzal), 300; cerebrospinal fever, 47; poliomyelitis, 33: polio-encephalitis, 1; encephalitis lethargica, 1; dysentery, 70; puerperal pyrexia, 136; ophthalmia neonatorum, 56. No case of cholera, plague, or typhus was notified during the week.

Deaths.—In 126 great towns there were 4 (0) deaths from enteric fever, 1 (0) from scarlet fever, 6 (3) from measles, 5 (0) from whooping-cough, 3 (0) from diphtheria, 39 (2) from diarrhœa and enteritis under two years, and 6 (0) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 274 (corresponding to a rate of 31 per thousand total births), including 43 in London.

TYPHOID IN WALES.—Up to August 26 there have been 11 further secondary cases of typhoid in Aberystwyth and district, making a total of 134, with 4 deaths.

In England Now

A Running Commentary by Peripatetic Correspondents

I ASKED our professor of anatomy what his views were on the reform of the medical curriculum in his own subject. He agreed that much dead wood should be cut out of the large forest of anatomical detail, but I found that he was bent on planting several new saplings, such as genetics, embryology, neuro-anatomy, and histology in his domain. I remarked that the last two were often taught by physiologists, but he sniffed and said that they were better taught by anatomists. I then changed my ground. "Do you really think it necessary for the medical student who is to become a general practitioner to dissect the whole human body?" I asked. He looked at me as if I had suddenly taken leave of my senses. "Of course," he replied, "how else can he obtain the necessary knowledge for the practice of his profession?" "As a matter of fact he does not now obtain that knowledge," I answered, "or if he obtains it he does not retain it." "What do you mean by that?" he asked almost angrily. "Simply this," I said, "that the medical student by the time he is ready to go in for his final examination in surgery has, as a rule, forgotten most of the important data which he was supposed to learn by dissection." The professor doubted this, so I invited him to the next surgical anatomy examination for the qualifying degree in surgery to hear and see for himself the abysmal degree of ignorance of anatomy revealed there. I doubt if he will come, and if he came I doubt whether he would draw from the evidence the same conclusions which I would draw.

Every examiner in surgery will probably agree with me that most students up for their final do not know the basic facts of anatomy. The only way in which these facts can be taught is by continuous repetition. Such a method of teaching is dull for the teacher, and it is quite understandable that many may lay undue stress on the (to them) more interesting problems of embryology and neurology which should really be dealt with in an honours class.

I doubt very much if the dissection of the whole body should be compulsory for the ordinary qualifying examination. Certainly the arm and the lower limb should be dissected, but if the student has a sound knowledge of the skeleton he should acquire sufficient knowledge of the abdomen, chest, and cranium at demonstrations in the dissecting-room and the post-mortem room. Anyway, I prophesy that circumstances will soon compel the limitation of anatomical dissection. When the new social security and health Bills become law where will the anatomical subjects come from?

* * *

Why my thoughts went back to that ancient half-forgotten figure of a physician, Verrily Namlos, I do not know. But I had been dipping into a new History of Medicine which someone had given me, and I was perhaps keenly conscious of the great cloud of witnesses whose names adorn our profession. He was not highly thought of in his own day. His was one of the obscurer medical schools—St. Gallipot's, then almost hidden in a retiring old-world corner of the City, on the south-west side of Galen's Gardens. He wrote little. Comparatively early in his career he ceased to speak at official medical meetings, save on the rarest of occasions. Although he became a fellow of the College, he never held high office, and when he died the president was hard put to find anything original to say about him in the annual obituary oration.

I once heard him claimed as probably the greatest medical educationist of all time—and that years ago, before the modern debasement of the currency of words. Yet nowadays who remembers him, save as a name to which there clings a faint aroma of distinction, elusive and ill defined? Even the little biography, put together some years after his death by a few of his old students, is hardly ever read; the copies which, for curiosity, I have hunted out in various medical libraries were covered with the dust of years. My own precious copy I picked up, long before the war, in the sixpenny box at Mustie's bookshop in Physicians' Walk, its brown calf covers tattered and loose at the hinges, its old-fashioned pages

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badly foxed. You must get hold of a copy if you would see what he made of medical teaching; for there is a quality about it which defies summary, or even quotation. It is a book to be read as a whole, to be marked, learned, and inwardly digested. But I cannot forbear to pass on (as a kind of aperitif) an illuminating confession made in later life to one of his biographers. In my view it can stand as the perfect background to the man.

At the outset of his career as a physician, on his appointment to the staff of his teaching hospital, Namlos took a tramping holiday, alone, in the Lakes, with the purpose of getting straight in his mind what medical teaching and education really meant. He came to realise that there were three things he must at all costs avoid—three "temptations of the Devil," as he put it. The first was to teach medicine by rote, reducing it to an easily memorised system of tips, classifications, short cuts, synopses, unrelated facts. To do this would doubtless bring him popularity as a "good teacher," and there would be plenty to join his classes for such examination drill. He saw that to yield to this, the most insidious of temptations for the medical teacher, would be to offer his students stones instead of bread. He enjoyed contact with students, and a popular following would have given him much pleasure; but it was not in his character to seek popularity, and he never achieved it.

Of much less appeal to a man of his type was the temptation of trying to build up a reputation of being gifted with mysterious clinical powers. Some teachers hoodwink themselves, and for a time their students, into the belief that there are secrets of medicine which they, and only they, possess. They almost come to feel that, wizards themselves, they may graciously pass on the magic tricks to their initiates. Namlos could only chuckle at the thought of his ever joining such a magicians' circle; he would be found out at once, by the greenest novice among his clinical clerks.

He admits that for a brief period Satan nearly got under his guard with a third temptation, by sketching a picture of the rôle of the great man in medicine—vistas of leadership and opportunity, of academic and public honours, which in their turn would lead to ever-widening influence among the great and powerful. So, through him, might medicine become greater, and his own name be remembered down the ages as a benefactor of mankind. A devilishly appealing picture, indeed! But as he came down the hillside, one darkening afternoon, to the little farm where he was staying, and to the simple rugged souls with whom he was at home, he knew that for him this sort of activity and achievement would be but vanity. One of Sydenham's *Observationes Medicæ* came to his mind: "There is but one sort of true wisdom, to take a true measure of one's self and not throw dust in one's own eyes."

I should have enjoyed writing his obituary notice. I would like to have written of him what was said, years later, of an Oxford teacher: "He loved great things, and thought little of himself; desiring neither fame nor influence, he won the devotion of men, and was a power in their lives; and seeking no disciples, he taught to many the greatness of the world and of man's mind."

* * *

Correspondents, both peripatetic and honorary, have recently complained about the F.R.C.S. and D.X.Y. examinations; so let me, among the trumpetings of these great men, insert a diffident whimper about the M.B. This exam is near and very dear to me—but it is not nearly near enough, that is the trouble. The feeble-minded among us are referred for three months (*three*, mark you) but we have to wait six for the next opportunity. The senior members of the profession, who decide these things, looking back on their century of service, may well argue that three months is little in a man's life, but let the senior member break his glasses in July and hear that they can't be repaired till October. My friends, though commiserating with me last April, were envious, too. "Think of it," they said, "the whole summer and nothing to do but revise for half of one part." I was pleased as well as annoyed. I could read all those Penguins I had bought and never opened, I could go to the theatre as often as a civilised man ought, I could read diffusely and indiscriminately among the textbooks instead of looking up "the things they ask." But my friends dash off parts of the Conjoint and qualify all round me. "Utility Doctor!" I say with scorn, the more bitter because I envy them. I could do the same of course, take the whole Conjoint at once, but forty-odd quid is more than I can raise, in addition to M.B. fees, for a diploma I don't really want.

Then hanging over me throughout this lazy summer is the possibility that I might fail next time. At night I dream that I get Snodgrass, who is notorious for spending a whole viva plugging away at some obscure detail. At breakfast I know that in six months I can learn so much that even Snodgrass won't be able to catch me. By the time I break for coffee in the morning I know that if I do nothing but this subject, which has never interested me anyway, for six months I shall go mad. Perhaps if I were a Good Type I would be sufficiently interested in every specialty of medicine to immerse my soul in any one of them for half a year.

Why not an M.B. exam every three months, like the Conjoint? Perhaps because far fewer students would take the latter (about 40% of students from London schools register on a diploma and take a degree later). If only somebody would do something about the Goodenough report, all would be well. But while planning smacks of Mr. Bevan, and free competition between the licensing bodies is in Bad Taste (and it lowers the prices, but we won't mention that) what is a poor student to do?

* * *

Oh the London Deans,
The Provincial Deans;
Oh the deans brought up on medicated beans;
Oh the tall deans,
Short deans,
Much too fond of sport deans;
Oh the deans with the means to support deans;
Oh the long-nosed deans;
Oh the pin-toed deans;
Oh the stiff-necked, the bottle-necked
Oh the duff-stuffing, snuff-puffing, dottle-decked
Deans.

* * *

One of the snags of the Army is the lack of responsibility—it is far too easy to "pass the buck." Even the R.A.M.C. are not exempt. Specialist services are too easily available—far too many patients are referred for specialist opinion or for admission to hospital without being examined properly, if at all. This lack of the sense of responsibility particularly applies to those who have never been in civilian practice. Whether a M.O. does his job well or not makes no difference to his pay or promotion prospects. Unless he is moved from within to do his best for his patients, and unless he feels a sense of responsibility for their welfare, he will be a bad doctor. Unfortunately, no legislation can remove this defect from an organised medical service, where there is no struggle for existence and no incentive to work hard. Presumably the solution is the more careful selection of candidates for medicine?

* * *

I wonder when the scientific mind will get to work on our birthdays. Probably they are fairly well down the list, but I fear the day is inevitable when the cold shower of common sense will wash away much of the haphazardness of this event. For instance, I turned up on March 2, 1923. On the icy pavement of the previous winter my mother probably had several shots at precipitating my arrival at times when I was just getting past the lizard stage. When the time did come, the doctor was messing around in his car in the last snowdrift before spring and gave neither of us a helping hand. My father saved up his last winter cold for me, so that I was grappling with a bronchopneumonia when I should have been devoting my leisure to integrating my personality.

I should imagine birthdays will be restricted to June, July, and August, probably largely by the prohibition of contraceptives in September, October, and November and their free supply for the rest of the year. Children will be unanimously in favour as it safeguards them from the tragedy of a birthday next door to Christmas, when presents and parties are usually miserably telescoped. Parents will put up only sporadic resistance. The organised fight will come from the vested interests: the contraceptive manufacturers struggling for their private enterprise and obstetricians for their summer holidays.

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Notes and News

THE CAPITATION FEE

LAST Saturday the Ministry of Health announced that the capitation fee payable to doctors for each insured person on their lists under the National Health Insurance Acts has been increased from 10*s.* 6*d.* to 12*s.* 6*d.* with effect from Jan. 1, 1946. Accumulated back payments will be made in the near future—if possible at the end of September.

The extra cost of the new fee during the period between Jan. 1, 1946, and April 1, 1948, when the National Health Service will come into operation, will be about £4,500,000. Discussions on the subject between the Ministry and the Insurance Acts Committee were summarised in our issue of August 3 (p. 166).

THE STUDENTS' JOURNAL

THE development, in a few years, of the British Medical Students' Association from a relatively sluggish section of the National Union of Students has been almost as remarkable as the metamorphosis of a caterpillar. This year the association has published the first issue of the *British Medical Students' Journal*, an international number, well written and produced, and illustrated by good photographs. It tells the story of the first World Student Congress to be held since the war.

> "On the 17th November, 1939, the Charles University in Prague was closed by the German authorities, nine heads of the students' organisation were shot, and a large proportion of the male student population was thereafter thrown into concentration camps or sent to forced labour inside Germany."

Refugee students and British students decided together that the day should be remembered as International Students' Day; and the first celebration of it was held in Prague last year. The great welcome given to students of all countries who went to this gathering and the plans made for their discussions and for their entertainment evidently moved deeply those who attended, and must have done much to establish that sense of fellowship on which the peoples of the world must rely for a safe and constructive future.

This journal makes impressive reading.

PATENT-LAW REFORM

THE Joint Chemical Committee on Patents submitted a memorandum to the Board of Trade Patents Committee in September, 1944; some aspects of the views therein contained, especially in relation to chemical manufacture, the exploitation of medical discoveries, and the preservation of secrecy, were discussed here at the time (*Lancet*, 1944, ii, 542). In June of this year the Joint Committee produced a second memorandum, covering wider considerations of patent-law reform. The two documents have now been reprinted in a single volume published by the Association of British Chemical Manufacturers (3*s.* post free). Some of the recommendations have already found favour and are included in the Second Interim Report of the Departmental Committee (Cmd. 6789). Patent law is repulsively technical, but those who understand these mysteries will find much to interest them in the new publication.

To take a casual instance of the complication of the law, the awkward interpretation of words like "manner of manufacture" has been illustrated by the recent discovery of powerful insecticides. Hitherto little more than chemical curiosities, certain substances have been found to possess great industrial significance. Being new, the discoveries should confer patentable "subject matter" in their novel industrial application as insecticides. The application is the manufacture, but, since the substance was already known, the manufacture lacks novelty and is unpatentable. Killing insects is not manufacture. The only patent cover obtainable is for some novel composition containing the active substance—in other words, for the mixing of the substance with a diluent. So what is intrinsically unpatentable becomes patentable by the addition of a non-inventive stage. The manufacture would be patentable, if novel; the mixing of some common diluent is relied upon to provide the necessary novelty. In Holland and the United States, as in pre-war Germany, it appears, the use of substances as insecticides has been patentable.

Two matters in the memorandum may be mentioned as of interest to the medical profession. Under section 38A of the Patents Act, compulsory licences may be granted in respect of patents relating to food and medicine. No great use has been made of the powers in the section, though they may have indirectly inclined pharmaceutical manufacturers to grant licences by voluntary agreement. The Joint Committee observe that difficulty has occurred in interpreting section 38A because the section deals both with chemical inventions and also with inventions relating to food and medicine. They suggest that when the Act is rewritten the section should be split and the two classes of invention separately treated.

Secondly they note that the royal prerogative reserved to the Crown by section 97 has lately been exercised to refuse a patent concerning a device for calculating the "safe periods" for marital intercourse, and that under section 75 patents have been refused for contraceptive chemicals and devices. The Act at present embodies this jurisdiction to refuse recognition to patents "contrary to law or morality." The Joint Committee think that the words "or morality" might be deleted from the statute. Such inventions, they say, may be useful contributions to medical knowledge and it is difficult today to regard them as necessarily contrary to public morals. "Many patented inventions are capable of abuse with much more devastating results, and we urge that patent specifications are a form of literature which should be regarded as 'technical' equally with the *Lancet* and the *British Medical Journal*."

CENSUS OF HOSPITAL CASES

THE Glasgow Bureau of Health and Sickness Records, of which Prof. T. Ferguson is chairman, is undertaking a census of all hospital-treated sickness occurring among people domiciled in the county of Stirling (including the "large burghs" of Falkirk and Stirling) during the year beginning on Oct. 1. The intention is to cover all kinds of sickness, including mental illness, and to collect information about Stirlingshire cases not merely from hospitals within their area but also from city and other hospitals to which patients in the county commonly go for treatment. The aim is to get a fairly complete picture of the nature and extent of hospital-treated sickness in what is a fairly typical and representative Scottish county area. The information thus obtained may well point the way to useful administrative action.

BRITISH BOOKS ON SHOW IN SWITZERLAND

AN exhibition of British books, old and modern, general and technical, will be opened in Berne on Sept. 3, and will later be shown in Bâle, Zürich, Geneva, and Lausanne. The first exhibit is an original leaf of the *Chronicles of England*, printed by Caxton in 1480. A separate section will be devoted to the periodical press. The display, devised by the British Council, follows four months after an exhibition of Swiss books in London.

INVALID AND VOIDABLE MARRIAGES

"MARRIAGES are also void in the case of certain diseases. Information about these should be sought from a reliable medical man." Reading this statement in a book, a clergyman asks us for further facts.

There are certain requisites for a valid marriage, and if any of these is absent the marriage is void ab initio: (1) both parties must be over sixteen years of age; (2) both parties must be mentally capable of understanding the nature of the contract; (3) the parties must not be within the prohibited degrees of relationship; (4) both parties must freely consent, consent obtained by duress or force being void, but not consent obtained by fraud; (5) there must not be an already subsisting marriage which is valid; and (6) the ceremony must be in proper form.

It will be seen that there is no provision for invalidity on the grounds of disease, apart from (2) above. There are certain grounds upon which a marriage is *voidable*, but this does not mean that the marriage was originally unlawful, and indeed in all these cases it is entirely at the option of the party aggrieved whether the marriage is avoided or not. Even in the case of venereal disease the petitioner must satisfy the court that he or she was unaware of it at the time of the marriage and refused intercourse on learning of it (Matrimonial Causes Act, 1937). The clear implication is therefore that such disease is no bar to a valid marriage.

The grounds of voidability are (1) incapacity due to incurable physical mental or moral disability; (2) wilful refusal to consummate; (3) unsound mind or mental deficiency of one party of which the other was ignorant at the time of the marriage; (4) communicable venereal disease subject to the proviso above mentioned; (5) pregnancy of the respondent by another man at the time of marriage. In all these cases the marriage is valid until avoided, and in the last three petition must be made within a year of marriage.

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MEDICINE IN THE ROUGH

Dr. Edwin Seaborn has produced an unusual volume of medical history.[1] It is an epic of the adventures and untold difficulties of the pioneer surgeons of the prairies, and it tells of traders and log cabins, of medicine chests, wagons, and canoes, of sorties and ambushes, of buffaloes trapped in the snowdrifts, and of amputations rudely performed with the huntsman's knife. We read of François Guitault, Cartier's own physician on the voyage of 1534, who saw the Indians prescribe, for the treatment of scurvy, a broth of the green tips of spruce; of André Arnoux, who dressed the wounds of Monctalm after the battle on the plains of Abraham in 1759; of Sieur de la Salle, whose romantic travels ended, after rebuilding the fort at Starved Rock, in the naming of the State of Louisiana for his monarch Louis XIV; of René Goupil, surgeon of Anjou, and later donné in the Jesuit Mission at Quebec, who, after being cruelly tortured by the notorious Iroquois, was treacherously slain with a tomahawk in the Huron territory; and of Etienne Bouchard, of Montreal, who in 1654 perfected for his patients a comprehensive insurance scheme against all illness other than plague, smallpox, leprosy, epilepsy, and stone requiring the knife.

Indians abandoned themselves to unmitigated sorrow and ceremonial dancing when the smallpox was rife, for death they expected daily. Wolf Chief, the Brave, cocked his gun as naked he advanced on the fort, swearing vengeance on the pale-faces whom he blamed for the fatal disease; and the pipe remained unsmoked so long as the daily toll of victims grew. The practice of inoculation seems to have been known to the Red Indians, but Dr. Seaborn is surely in error when he asserts that George Christian Anthon was a protagonist of vaccination before Jenner; for the account he gives earlier of the practice of vaccination, is that of inoculation. The backwoods of medicine in the raw are shown up in the story of the theft of the solitary iron bedstead from the Port Stanley Cholera Hospital, of the futility of the hospital at Turkey Point which cost £53 but was never used, and of the objectionable practice of salting up for future dissection the unhappy victims of the gibbet.

We like the illustrations of Patrick Donnelly with his Schubert-like face, of Henry Saunders with his speedy penny-farthing, and of George H. Wilson who dressed like a cossack. We are taken also with the pictures of the early medical schools and of Dr. Joseph Lancaster's unique octagonal house. Dr. Seaborn's careful research into the history of Canadian medicine will rank as a classic of its kind, and the reader will pay his tribute to those who practised their art and profession and gave of their best on the lonely trails of the West.

DOCTORS TO BELONG TO TRADE-UNION?

AT a recent meeting of the Salford city council a resolution was passed recommending the council to direct that all its employees "shall be members of their appropriate trade-unions or organisations." A suggestion in the lay press that the British Medical Association would not be recognised as a suitable organisation has been denied by the promoters of the resolution, who have also stated that the resolution was intended to refer primarily to non-union manual workers, and that if it was applied to doctors and nurses they would be free to join any association they choose. We understand that in fact the doctors and nurses working for the council have not so far been asked to comply with the resolution. Dr. J. L. Burn, the medical officer of health, has informed his colleagues that he would strongly resist any suggestion of pressure on the medical staff to join a trade-union or any particular organisation.

A resolution in similar terms is, we are informed, being considered by other local authorities.

Mr. A. TUDOR EDWARDS, surgeon to the Brompton Hospital and surgeon in charge of the department of thoracic surgery at the London Hospital, died at St. Enodoc, Cornwall, on August 25. He was 56 years of age.

Dr. EARL CARLSON, of New York, will deliver a lecture on Cerebral Palsy in Children at 4 P.M. on Monday, Sept. 9, at the London School of Hygiene, Keppel Street, W.C.1.

The Croix de Chevalier of the Legion of Honour and the Croix de Guerre avec palme have been conferred on Mr. ROWLEY BRISTOW.

1. Seaborn, E. March of Medicine in Western Ontario. Toronto: Ryerson Press. London: obtainable from Hatchards. Pp. 386. 30s.

Return to Practice

The Central Medical War Committee announces that the following have resumed civilian practice:

Mr. D. N. MATTHEWS, O.B.E., M.CH., F.R.C.S., 152, Harley Street, W.1. (Welbeck 2714.)
Dr. KENNETH ROBSON, F.R.C.P., 57A, Wimpole Street, W.1. (Welbeck 0270.)
Miss MARGARET SALMOND, M.B.E., F.R.C.S., F.R.C.O.G., 121, Harley Street, W.1.

Medical Diary

SEPT. 1 TO 7

Monday, 2nd

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
3.45 P.M. Prof. R. A. Willis: General Pathology of Tumours: Definition, Classification, and Nomenclature.
5 P.M. Dr. C. A. Keele: Autonomic Drugs.

Tuesday, 3rd

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. R. A. Willis: Structure and Growth of Epithelia Tumours.
5 P.M. Dr. C. A. Keele: Autonomic Drugs.

Wednesday, 4th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. R. A. Willis: Structure and Growth of Mesenchymal Tumours.
5 P.M. Dr. Michael Kremer: Spinal Cord.
MEDICAL SOCIETY OF THE L.C.C. SERVICE
3 P.M. (Queen Mary's Hospital, Carshalton.) Clinical meeting.

Thursday, 5th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. R. A. Willis: Structure and Growth of Neural Tumours.
5 P.M. Dr. Michael Kremer: Cerebellum.

Friday, 6th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. R. A. Willis: Structure and Growth of Endocrine Tumours.
5 P.M. Dr. Michael Kremer: Concussion.

Appointments

HARKNESS, J. W. P., C.M.G., M.B. Glasg.: medical adviser to the Comptroller for Development and Welfare in the West Indies.
KING, D. P., M.A., M.D. Camb.: bacteriologist, Charing Cross Hospital, London.
TIBBLES, SYDNEY, L.R.C.P.E.: eye specialist to Kent and London county councils.
London County Council mental health services:
BUTLER, E. N., M.R.C.S., D.P.M.: first asst. M.O., Cane Hill Hospital, Coulsdon.
CRAWFORD, J. M., M.D. Edin., D.P.M.: first asst. M.O., St. Bernard's Hospital, Southall.
KIRMAN, B. H., M.D. Lond., D.P.M.: deputy medical superintendent, Fountain Hospital, Tooting.
STIRLING, PAULINE, M.B. Edin., D.P.M.: first asst. M.O., Friern Hospital, New Southgate.
TUCKER, G. M., M.B. St. And., D.P.M.: first asst. M.O., Darenth Park, Dartford.
Royal Sheffield Infirmary and Hospital:
BRODY, H. P., M.R.C.P.: physician.
LEISHMAN, A. W. D., D.M. Oxfd, M.R.C.P.: physician.
SKIPPER, E. W., M.D. Lond., M.R.C.P.: physician.

Births, Marriages, and Deaths

BIRTHS

BRINTON.—On August 24, in London, the wife of Dr. W. D. Brinton, of Victoria Road, W.8—a daughter.
CURNOCK.—On August 17, at Chingford, the wife of Dr. Henry Curnock, of Wanstead—a son.
DAY.—On August 20, at Cranford, Middlesex, the wife of Dr. T. D. Day—a son.
DIVINE.—On August 19, at Huddersfield, the wife of Dr. T. A. Divine—a daughter.
GOTLA.—On August 17, the wife of Dr. Dudley Gotla—a son.
HUTCHIN.—On August 18, the wife of Dr. K. C. Hutchin, of Hatfield, Herts—a daughter.
JONES.—On August 18, the wife of Dr. J. M. Jones, of Shoreham, Sussex—a son.
KELLY.—On August 18, in London, the wife of Dr. Reginald Kelly—a son.
LANKESTER.—On August 21, at Oxted, Surrey, the wife of Dr. John Lankester—a son.
MURRAY-LYON.—On August 17, in Edinburgh, the wife of Dr. Ranald Murray-Lyon—a son.
RICHARDSON.—On August 21, the wife of Mr. J. E. Richardson, M.S.—a daughter.
SCOTT.—On August 15, the wife of Dr. C. J. Scott, of Chilham, Canterbury, Kent—a daughter.
WOOD.—On August 20, at Oxford, Dr. Elizabeth Wood (*née* Sutcliffe), wife of Dr. Ben Wood—a son.

MARRIAGES

WASS—BLAIKIE.—On August 20, at Brighton, Samuel Hall Wass, F.R.C.S., of Kensington Mansions, London, S.W.5, to June Mary Vaudine Blaikie.

DEATHS

KINSEY-MORGAN.—On August 21, at Boscombe, Bournemouth, Augustus Kinsey-Morgan, F.R.C.S.E.
TUDOR EDWARDS.—On August 25, at St. Enodoc, North Cornwall, Arthur Tudor Edwards, M.D., M.CHIR. Camb., F.R.C.S., aged 56.

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